

The background of the entire page is a complex, abstract pattern. It consists of numerous concentric circles of varying sizes, some of which are nested within larger, irregular, organic shapes. These shapes resemble topographical contour lines or perhaps a microscopic view of a material. The pattern is distributed across the entire surface, creating a textured, almost hypnotic effect.

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# THE ARCHITECTURAL REVIEW

Volume 109 Number 652 April 1954



**The Cover** is from a crystallographer's diagram, showing the structure of awillite, a hydrated calcium silicate formed in the setting of cement. All such diagrams take the form of repeating symmetrical patterns, like wallpaper patterns, and two years ago a scheme was initiated by the Council of Industrial Design with the idea of using them as the raw material, so to speak, for applied pattern in the sphere of industrial design. Some of the results of this scheme are illustrated on pages 237 and 238, and the validity of this kind of approach to design problems is considered on pages 236 and 239, where Dr. Helen Megaw describes the purposes and methods of the scientist in the investigation of crystal structure. The colours of the diagram on the cover were chosen solely from the decorative point of view, and have no scientific significance.

204 **Frontispiece: Chimère** by *Graham Sutherland*

205 **The Royal Fine Art Commission** The Commission was founded in 1924 to watch and advise upon matters relating to the visual arts that affected the public at large. In practice this has meant that its chief task has been, and is, the vetting of designs for prominent new buildings submitted to it in its advisory capacity. Unfortunately its approach to this task seems of late to have proceeded from the premiss that lack of statutory power to forbid releases it from the moral duty to protest. The new Ocean Terminal at Southampton, the Lessor Scheme office blocks, the new Colonial Office near Westminster Abbey, the rebuilding of Carlton House Terrace—all these are buildings or projects which have been unloaded on a protesting public with the seal of the Commission's approval already attached, although it is inconceivable that any of them would find much support from its highly distinguished members as private

individuals. It is suggested that in taking a bolder line the Royal Fine Art Commission would win a measure of public sympathy and support that would more than compensate for its lack of statutory powers.

209 **Railway Terminus at Rome** *Architects: L. Calini; M. Castellazzi; V. Fadigati; E. Montuori; A. Pintonello; A. Vitellozzi.*

217 **Building with Wit** by *Nikolaus Pevsner* The publication of the Lutyens memorial volumes invites a reassessment of that architect's stature as an artist and place in history, which is here undertaken by Nikolaus Pevsner. It is not possible, Pevsner points out, to dismiss Lutyens as a mere revivalist, for there is much in his work—the handling of space, the underlying geometry, the keen interest in materials and craftsmanship—that gives it an inner seriousness which no amount of fancy dress can altogether conceal. Looking for continental parallels, Pevsner finds the nearest in Berlage (born 1856) and de Klerk (born 1884)—Lutyens was born halfway between them in 1869—but unlike them Lutyens never renounced period ties. Nor was he in the least interested in the social aspects of architecture: the man who in the Viceroy's House at New Delhi produced the supreme monument of British imperialism was fundamentally uninterested in politics—a believer, perhaps one of the last of the believers, in art for art's sake.

227 **House at Fitzroy Park Highgate** *Architect: June Park*

231 **Preview: Festival Pleasure Gardens, Battersea Park** The REVIEW presents a preview of the pleasure gardens in Battersea Park, contrived for the Festival of Britain, illustrated from the drawings of the artists and architects responsible for some of the outstanding features.

236 **The Investigation of Crystal Structure** by *Helen Megaw* Some two years ago the Council of Industrial Design invited twenty-six leading British manufacturers to work upon a design programme in connection with the Festival of Britain, the idea being to produce a new range of patterns based upon crystallographers' diagrams—that is, the diagrams used by the scientist to chart the arrangement of the atom in particular materials. Here the results of this venture are illustrated, while an article by Helen Megaw explains the principles followed in the investigation of crystal structure.

241 **Brunel and Paddington** by *Henry-Russell Hitchcock* The great railway stations, although they were in a sense the cathedrals of the nineteenth century, have only within the last few years come to be given the attention that their structural innovations and architectural quality entitles them to. Here Henry-Russell Hitchcock discusses one of the most famous, the London terminus of the former Great Western Railway at Paddington, and the collaboration between the architect Matthew Digby Wyatt and the engineer Isambard Kingdom Brunel that gave it its present form.

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272 **Acknowledgments**

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THREE SHILLINGS AND SIXPENCE

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*CHIMERE*. 1946-7, by Graham Sutherland. Oil on canvas. 70 in. by 36 in. In the possession of the artist. Reproduced from Graham Sutherland, recently published, with an introduction by Robert Melville, by the Ambassador Publishing Co.

# THE ROYAL FINE ART COMMISSION

Once every week the *Queen Mary* or the *Queen Elizabeth* steams up Southampton Water bearing a load of visitors to Britain, many of whom are coming for the first time. They arrive expectant but critical: prepared to feel superior about the backwardness of the Old World compared with the New, yet willing to be surprised into admiration.

Which opinion they form will be partly determined, from the moment they prepare to disembark, by the things that meet their eye. They will have been duly impressed by their ship itself as an example of British craftsmanship and design; less impressed, perhaps, by the decoration of its interior. But they will nevertheless arrive at Southampton predisposed to be pleased by things British. They will then be confronted by the new Ocean Terminal.

This building, which was opened by the Prime Minister last summer, is no doubt efficiently planned, but its appearance is, we believe, utterly unworthy of its important situation. It is designed in a coarse version of a modernistic style fashionable in the early thirties. It is not a credit to contemporary English architecture, nor is it calculated to make a favourable impression on visitors. The design was greeted by many criticisms and protests when the building was opened. Then, of course, it was too late for protests to be effective. The question must be asked how such a design came to be allowed.

Machinery exists for ensuring that the designs for important buildings are officially examined before construction begins; there is the town-planning consent which has to be obtained (and which can be withheld on aesthetic grounds) and—far more important—there is the Royal Fine Art Commission which exists for the very purpose of considering designs for new public buildings and safeguarding public amenities generally. It can be imagined therefore what consternation was caused among critics of the new Ocean Terminal when the protests were answered by the announcement that its design had been approved beforehand by the Royal Fine Art Commission.

Now if this was a question of the taste of the Commissioners being at fault—or not agreeing with the taste of the critics—no very serious complaint could be made. The Commissioners are a body of individuals who can only follow their own judgment. But it is most unlikely that the design of the Ocean Terminal in fact appeals to the individual tastes of the distinguished and discriminating members of the Commission.\* How came it then that it was publicly blessed with their collective approval, a circumstance made very much more serious by the fact that several other

recent public buildings—widely condemned by experts and the public alike—have similarly been launched into the sea of public controversy already endowed with the approval of the Royal Fine Art Commission? Examples lately in the news are the rebuilding of Carlton House Terrace to serve as a Foreign Office, and the new Colonial Office to be erected near Westminster Abbey on the site of the old Westminster Hospital.

It is true that approval of both these buildings, and of the Ocean Terminal at Southampton, was accompanied by suggestions for minor modifications and was given subject to their being carried out. But this does not affect the unfortunate fact that buildings that are far below the design standard at which public architecture should aim are allowed to wear the seal of the Royal Fine Art Commission's approval and the efforts of the critics are repeatedly handicapped thereby. The Commission conscientiously examines designs that are brought before it, and no doubt expresses forcible opinions in private, but its present policy seems to be to aim at getting minor modifications made to unsatisfactory designs by means of careful diplomacy, on the principle no doubt that some improvement is better than none, and that by this means it can retain the co-operation of the offending architects.

Yet judged by recent events this policy is doing more harm than good. It may be true that by its means the Royal Fine Art Commission has saved us from a number of minor errors of taste which we did not even know were threatened. But its main role is to set a standard of civic design; to approve what is, and disapprove what is not, up to that standard. It cannot be good that the Commission's name should repeatedly be associated with buildings that are clearly not up to standard.

Nor is it good that its sanction should be given to the principle of improving designs by modifying those features that good taste does not find acceptable. Such a policy is too reminiscent of those popular handbooks on how to redesign a Victorian villa and give it an up-to-date flavour—by stripping the knobs and curlicues from the ridge-tiles, the fireplaces and elsewhere, then squaring everything off and painting it cream. The result is invariably the reverse of what is intended: nonentity is substituted for character. There is a lot to be said for the more ferocious architecture of the great Victorians; there is something to be said for the whimsicalities of Sir Edwin Lutyens and even perhaps for the florid architectural journalese of Sir Edwin Cooper. But for the negative good taste

\* The members of the Royal Fine Art Commission are: The Earl of Crawford and Balcarres (*Chairman*), Sir Kenneth Clark, Louis de Soissons, E. Maxwell Fry, Sir William Halpern, Professor W. G. Holford, Edward Maufe, Henry Moore, Raymond Mortimer, Professor A. E. Richardson, A. C. Richmond, John Summerson, Professor Geoffrey F. Webb, Professor John Wheatley, Charles Wheeler, Sir Hubert Worthington. The Hon. Godfrey Samuel (*Secretary*).

that results from such buildings being stripped, by a process of 'minor modifications,' of whatever personality their idiosyncrasies evoked, there is very little to be said indeed.

We cannot expect a higher standard of design than the architects we have are capable of producing; and in the long run, therefore, the only way to get better buildings is to train better architects; that is, by the slow process of education. But the purpose of the Royal Fine Art Commission is not primarily educational. It is a court before which individual cases can be tried as they arise and an appropriate verdict given. By following a policy of compromise, and by setting out to act as a mere ameliorative agent, it is undermining its own influence. That it can exert a powerful influence by taking the bold course of condemning outright a design of which it disapproves, was shown in the case of Coventry Cathedral. Sir Giles Scott's design was brought before the Commission in 1945. Disapproval was expressed and the design was withdrawn, leaving the way open for the architectural competition now being held. But such boldness has not been repeated. Ever since, as the Commission's latest annual report shows, it has followed a cautious policy of condemning nothing outright, with the unfortunate result already described.

It is only necessary to quote a few passages from this report. About the various monster blocks of offices, for lease to Government Departments under what is called the Lessor Scheme—blocks that have been widely condemned as quite unworthy of post-war London—the Commission, instead of leading the protests, mildly observes that they 'should be given a greater measure of architectural consideration than has so far been the case.' On the subject of one of these blocks in New Oxford Street the report says 'the Commission was able to encourage the adoption of an improved alternative to the original proposal.' This particular block, in its still uncompleted state, does promise to be less clumsy than some of the others. Nevertheless, the point of view implied in this observation does not suggest that the Commission is going the right way about fostering better architecture.

Then there is the question of street furniture, to which the Commission rightly attaches great importance and to which it devotes a section of its report, stating that advice is being given to manufacturers of lighting equipment and that 'the Commission trusts that a gradual improvement in the general standard of design will become noticeable.' It is widely agreed that, from the point of view of appearance, the design of the street-lighting equipment at present available is deplorable, yet town-planners and others who have to specify lamp-standards constantly receive catalogues from manufacturers in which some of their stock designs are advertised as being approved by the Royal Fine Art Commission. These may be the best available, but rather than have their name linked with designs that they can hardly approve of wholeheartedly, the Commission would serve their own and the public's interest better by frankly stating, if that be the case, that no worthy designs at present exist.

To take an example from outside London, public protests against the demolition of the Old Deanery in the Cathedral Close at Salisbury to make way for an extension of the Diocesan College coincided with the discovery that the Royal Fine Art Commission had already approved this very dubious proposal 'subject to agreed modifications.' It is true that the Commission says in its report that had the matter been raised earlier it would have suggested adaptation of the existing house instead. If that was its opinion, then surely its duty was to condemn the less desirable alternative, even at so late a stage. If the Diocesan Authorities had then proceeded with the scheme they would have done so in the face of the expressed disapproval of the Commission, to whom public opinion would certainly have rallied. But the public was allowed to know nothing of the Commission's alternative recommendations. All the public sees is a most undesirable scheme going forward, blessed once more with the Commission's approval.

Yet again there is the case, already mentioned, of the new Colonial Office alongside Westminster Abbey. The Royal Fine Art Commission's own remarks about this (published many months later in its report) are themselves the best condemnation of its policy: 'The Commission would have preferred to see on this site a smaller building than that which is in fact, to be erected, and to have it set further back from Broad Sanctuary: but the amount of accommodation which it was necessary for the Ministry to provide in the new building made this impossible. Certain adjustments were, however, made to meet the Commission's point of view, and it is satisfied that the compromise reached is in fact an improvement on the original proposal.'

If anyone was in a position to stand up to a Ministry that seeks to put expediency before public amenity it is the Royal Fine Art Commission, and, once more, if it had resolutely stuck by its opinions instead of allowing itself to be satisfied with a compromise it would have received so large a measure of public support that the Ministry would very likely have been compelled to change its mind. After a storm of public protest the Ministry has in fact now done so, at least to the extent of deciding to set the building line back another thirty feet. This will produce a result not very different from that which the members of the Royal Fine Art Commission—as we can see from their subsequently published report—desired in the first place, but which they had not the courage to insist upon. Public pressure has thus obtained a victory by its own efforts on the very ground on which the Royal Fine Art Commission—the public's proper spokesman—had already accepted defeat.

The most distressing case of all, however, is that of Carlton House Terrace, which had already, fifteen years ago, been saved by public outcry from the threat of destruction. When that campaign was safely won, the public had a right to expect that it would not have to be fought all over again and that, knowing the public's opinion on the matter, the Royal Fine Art Commission would act firmly and promptly if a further threat arose.

But what happened in practice? A further threat did arise; to its enduring shame the Government itself proposed to pull down the Terrace and rebuild it as a modern office block, leaving only the Mall façade as a reminder of the handsome piece of architecture that had once been there, and even upsetting the balance of that façade by adding a modern superstructure—treatment that in any other country would have been unthinkable as applied to a unique architectural monument.

The public had no chance of learning what was proposed except for a misleading Government answer to a question in Parliament and the exhibition of a perspective drawing in the Architecture Room at the Royal Academy. When its attention was drawn to the proposal, and another outcry raised, accompanied by the natural enquiry as to what the Royal Fine Art Commission was doing in the matter, it was disclosed that—once again—the Commission had already partly sabotaged the efforts to save it by giving its approval in principle. Instead of condemning outright the idea of tampering in any way with an acknowledged masterpiece it had merely suggested one or two minor modifications; like a policeman, who, instead of preventing a thief from hitting an old lady over the head with a cosh, decides it is more diplomatic to persuade him to despatch her by less barbaric methods—allowing the crime itself to claim the sanction of the law. The latest move in the Carlton House Terrace controversy is that the Commission has been asked to reconsider its opinion; so the remarkable situation has arisen in which public opinion has to be aroused in order to compel the Commission to oppose a plan against which the Commission should have protected the public in the first place.

The members of the Royal Fine Art Commission may feel it unfair to demand that they should show the courage of their convictions when their terms of reference are not such as to encourage prompt and vigorous action in every case—while the Commission remains, for example, an advisory body with no executive powers, and while there is no compulsion to refer designs to it. But we are concerned here with designs that *have* been referred to it. It will be time enough, when the Commission shows its willingness to adopt a more vigorous policy, to press for according it additional powers. A more uncompromising policy could certainly be followed without any change in the Commission's terms of reference. It could begin by resolving to condemn outright any proposal that deserves condemnation. Such condemnation should be made effective by immediately publicizing the Commission's opinion by all means at its disposal. Adverse opinions published in an annual report, long after the damage is done, serve no useful purpose; on the other hand, even without executive authority, the Commission could wield much power by the mere fact of publicly labelling a wrongly conceived project as contrary to the public interest.

As it is, the Commission is doing exactly the reverse. Even if, in spite of its failure to speak out and only because the public has itself stepped into the breach, Carlton House Terrace is saved and the new Colonial Office is prevented from overshadowing Westminster

Abbey, a vulgarly modernistic edifice at Southampton, an unwarrantable intrusion into Salisbury Close, a number of hideous office blocks in London and many other buildings of which the defects are only too obvious—to say nothing of clumsily designed lamp-standards all over the country—will stand immune from criticism because supported by the Commission's approval.

The Royal Fine Art Commission was founded in response to a long sustained protest by the responsible and visually literate public against the system by which accomplished facts are thrust on the public without their previous approval or consent—the reverse of the democratic principle, the æsthetic equivalent of taxation without representation. After battles in which *THE ARCHITECTURAL REVIEW* and *The Architects' Journal* were heavily engaged, the Government of the day proposed the formation of a body that should act as watch-dog for the public.

It was realized at the time that a watch-dog that quietly, and with the utmost diplomacy, ignored the arrival of the fox in the interest of a quiet life on the farm, or a watch-dog that gently took the farmer by the trouser-leg when he emerged with his shotgun to protect the hen-roosts, was no watch-dog at all; that, on the contrary, he was an ally of the fox. And *The Architects' Journal*, it can now be recalled, pointed out that unless the newly formed Commission accepted its responsibilities courageously—unless it acted as spokesman on behalf of the public—it would not only do little good, but would serve—to use yet another metaphor—as a fig-leaf with which to cover up the shame of the very authorities whose private acts it was designed to expose in the public interest.

As we stand today, the position is that the Royal Fine Art Commission is being used exactly as *The Architects' Journal* warned that it might be used—as the authority by which Authority excuses the æsthetic crimes it commits. It even places the necessary words in Authority's mouth: '... it is satisfied that the compromise reached is in fact an improvement on the original proposal.' Compromise, in fact, only puts another weapon into the hands of the enemy. By its cautious choice of the lesser evil instead of condemnation of all evil, the Commission acts as a diplomatic buffer between the public and its public buildings.

The names of the members and officials of the Royal Fine Art Commission command such respect in the architectural world that their findings are treated as *ex cathedra* judgments, but the disturbing thing is that in private life these distinguished people would, we believe, disavow the same judgments with all the strength of their personal convictions—an anomaly destructive beyond all measure to the cause of good architecture in this country. Much has been said and written lately about the need for fuller and franker criticism of contemporary architecture with a view to improving standards of design and encouraging public interest, but if on every important occasion the approval of the Royal Fine Art Commission is put into the hands of the philistines as their most powerful weapon, the critic is being most unfairly handicapped and the public utterly confused.

The Editors

# railway terminus at Rome

The new Rome railway terminus lies to the south of the Piazza Esedra, facing the enlarged Piazza dei Cinquecento. Originally the Villa Massimo, built in 1570, and its gardens stood on the site; facing it were the Thermae of Diocletian, with the ruins of the Agger Servius Tullius to the south-east. The villa was demolished to make way for the first Rome terminus which was built between 1864 and 1871 and enlarged in 1905. This station was in turn demolished in 1939 to be replaced by a new central terminus planned the previous year. The 1938 design comprised an immense colonnade over two hundred yards long with columns sixty-five feet high, which formed a link between a pair of wings one on either side of the railway tracks, containing offices and entrance halls. When the war halted work these wings were all that had been completed. In 1947 a competition was held for new designs to complete the unfinished parts of the station. The winners of the competition were two groups of architects, who then collaborated to produce the final scheme which has just been completed and is illustrated here.



## key

- |                                     |  |                                    |                                    |  |  |
|-------------------------------------|--|------------------------------------|------------------------------------|--|--|
| 1, platforms.                       | 11, air and coach lines.               | 21, letter boxes.                  | 31, stores.                        | 42, flowers and perfumes.              | 52, C.I.T. (Compagnia Italiana Turismo). |
| 2, end platform.                    | 12, telephones.                        | 22, to hotel and underground.      | 32, pantry.                        | 43, photographer.                      | 53, to railway offices.                  |
| 3, transverse gallery.              | 13, tobacconists.                      | 23, cafe bar.                      | 33, hoist and trucks.              | 44, chemist.                           | 54, air conditioning ducts.              |
| 4, booking hall.                    | 14, bookstalls.                        | 24, confectioners.                 | 34, to services and stores.        | 45, bazaar.                            | 55, to hotel and underground.            |
| 5, canopy.                          | 15, ticket control.                    | 25, to upper rooms and lavatories. | 35, main kitchen.                  | 46, ticket offices.                    | 56, restaurant garden.                   |
| 6, service hoist.                   | 16, information.                       | 26, outside restaurant.            | 36, pantry and bar.                | 47, loudspeakers.                      | 57, aerial for lighting and clock.       |
| 7, shop windows and advertisements. | 17, telegraph office.                  | 27, lunch counter.                 | 37, dishwashing and storage.       | 48, timetables.                        | 59, barrier and gate.                    |
| 8, exit and entrance controls.      | 18, various committees.                | 28, low-priced restaurant.         | 38, office.                        | 49, arrival and departure time-tables. | A and B, existing blocks.                |
| 9, foreign exchange.                | 19, tourist and hotel office.          | 29, to lavatories.                 | 39, food lift.                     | 50, reflectors and glass cases.        |  |
| 10, sleeping cars.                  | 20, arrival and departure time-tables. | 30, kitchen service.               | 40, to ticket offices and offices. | 51, bank.                              |  |
|                                     |  |                                    | 41, foreign exchange office.       |  |  |

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## RAILWAY TERMINUS AT ROME

L. CALINI, M. CASTELLAZZI, V. FADIGATI, E. MONTUORI, A. PINTONELLO, A. VITELLOZZI: ARCHITECTS

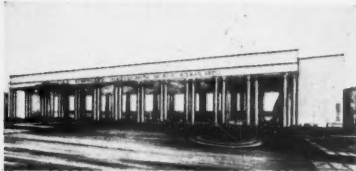
1 Villa Massimo, 1570



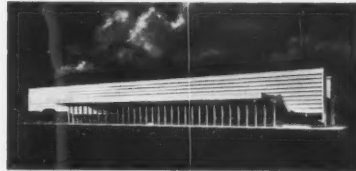
2 Terminus in the 19th century



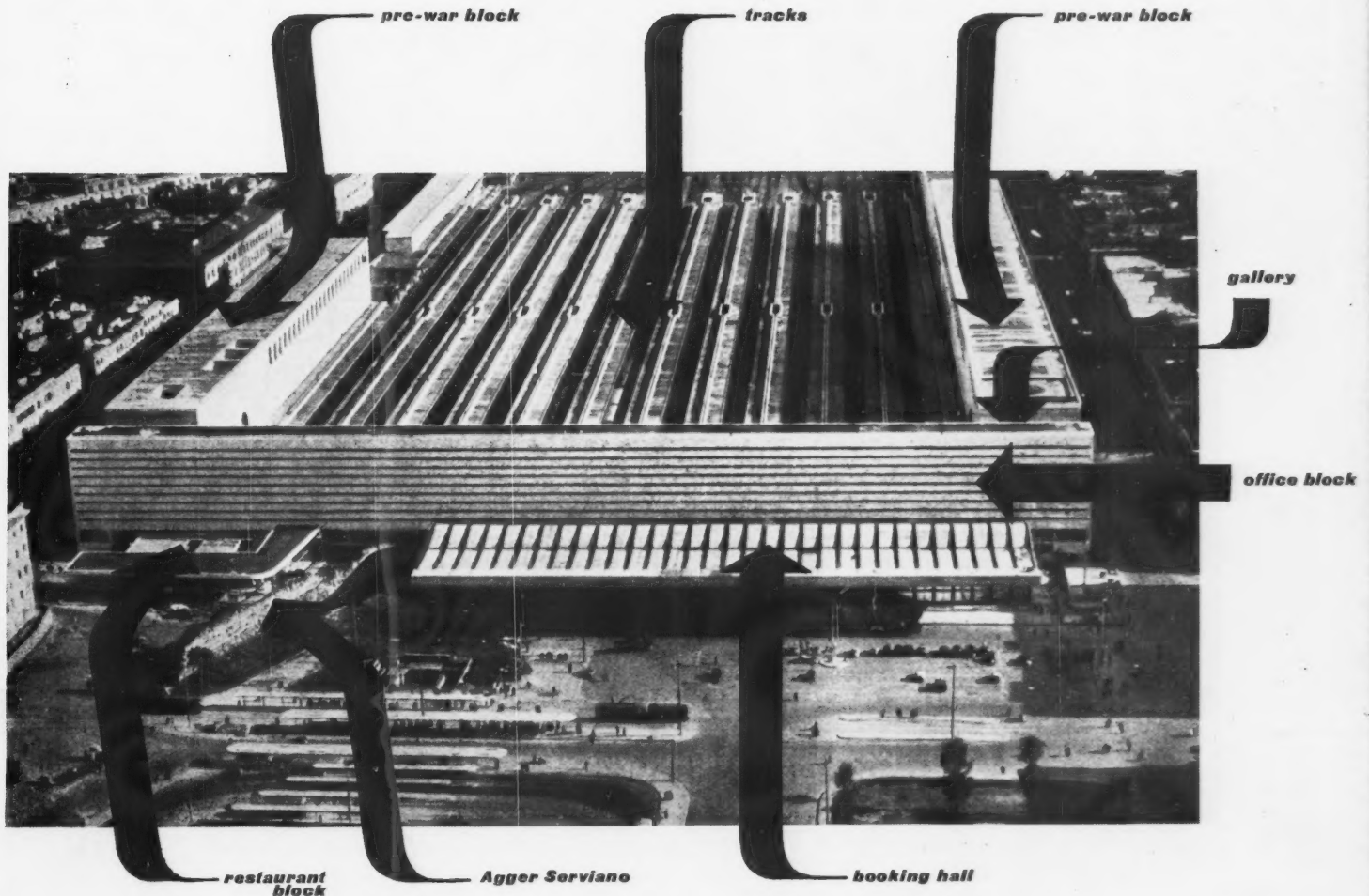
3 Project for centre block, 1938



4 Centre block as completed, 1950



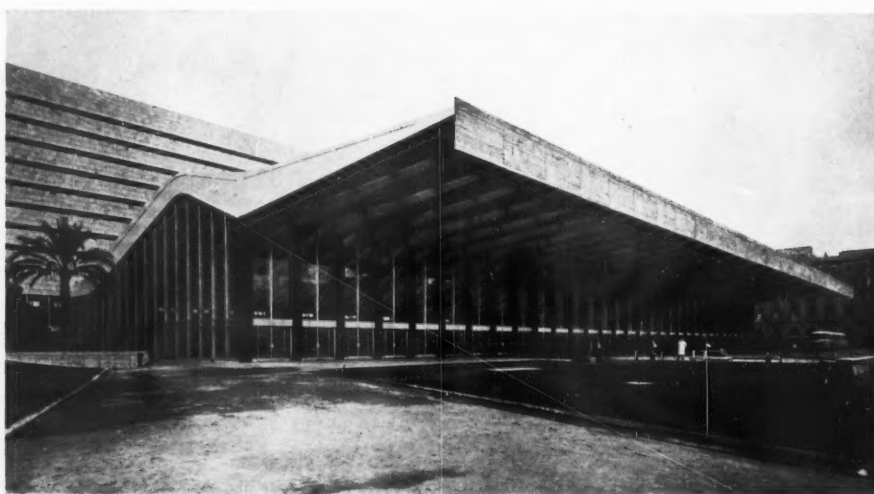
In the 1947 competition for Rome railway terminus the following conditions were laid down: that accommodation should be provided in the new building for the various sectional offices—then in different parts of the town; that these offices should be connected with the existing wings where other offices are located; that a large booking hall should be provided in the front of the building; that circulation should be so arranged as to avoid demolishing for the present the blocks of houses in the Via Giolitti; that the side entrances should be eliminated in favour of the front entrance facing the square; that the tracks should be extended fifty yards up to the end of the platforms; and that an efficient café-restaurant should be built near the front of the





6

6, a detail of the reinforced-concrete roof of the booking hall which extends to form a canopy over the roadway in front of the station. Behind can be seen part of the office block. 7, general view of the booking hall and canopy. The curved shape of the beams follows the profile of the ruins of the Agger Serviano, as can be seen in 9, on the facing page.



7

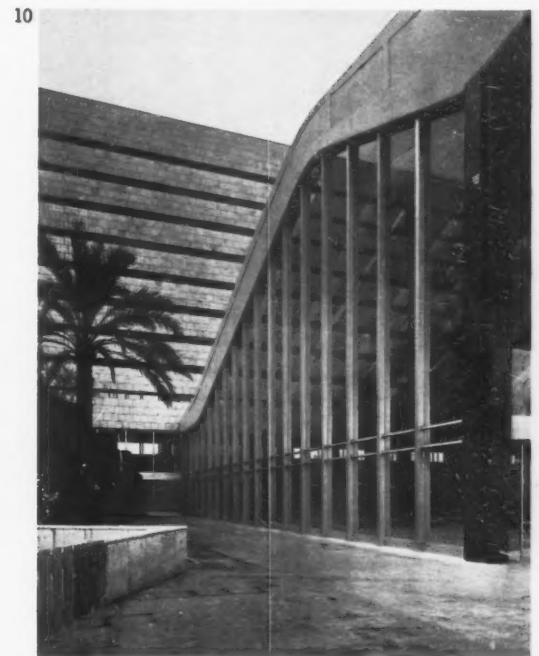
# RAILWAY TERMINUS AT ROME



8. an air view of the station looking across the Piazza dei Cinquecento. 9. the booking hall during construction, showing the Agger Serviano. 10. the northern end of the booking hall with part of the office block behind and the ruins of the Agger Serviano on the left. 11. detail of the booking hall entrance showing the glazed strips which provide natural lighting in the daytime and conceal the artificial lighting at night.

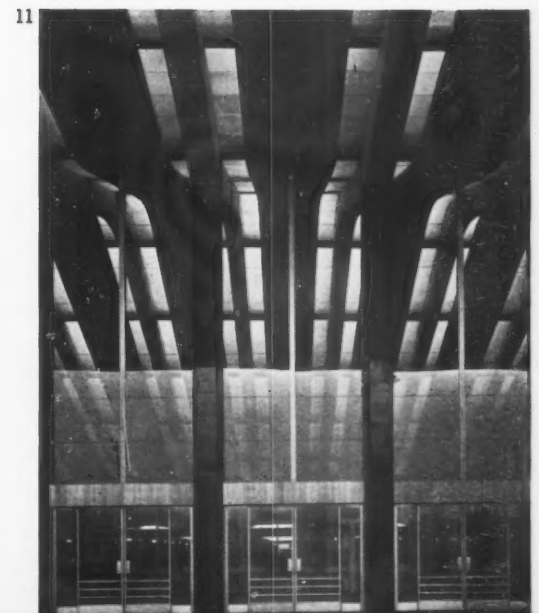
building with access from inside and outside the station. The architects' chief problem was the provision of four floors of offices facing the square while avoiding the walls of the Agger Serviano which came within a yard or two of the colonnade in the 1938 design.

The principal sections of the station are the main office block which faces the square and is the same height as the existing wings; the booking hall lying in front and to the right with its roof and canopy of curved beams; a glazed transverse gallery some forty-five feet high which is the main hall of the station and links the office block with the existing wings, the platforms



and a small block near the Agger Serviano containing the restaurants. The two existing wings, parallel with the tracks, also contain offices.

The main office block is five storeys high. On the ground floor are restaurants and additional booking offices, and above fifty offices on each of the four floors providing accommodation for 400 employees in all. The offices are served by two main staircases, four lifts, and an additional staff staircase at either end of the



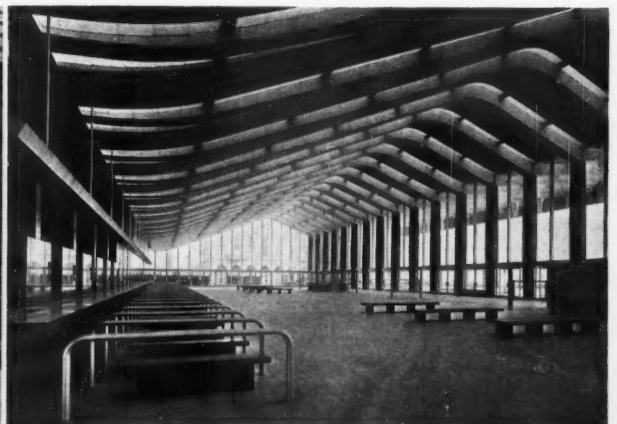


12. the main booking hall looking towards the south-western side of the Piazza dei Cinquecento. The floor is paved with pale pink granite slabs. 13. the booking hall roof and canopy from above. 14. interior of the booking hall; the benches are of red granite

13



14



# RAILWAY TERMINUS AT ROME

15



building. Windows are arranged in bands running the whole length of the block, two for each floor, one at eye level and one at ceiling level. The window area equals one-sixth the floor area of each office. The partition walls between the offices are movable.

The booking hall, which is in front of the office block, is placed to one side in order to retain the walls of the Agger Serviano, the curve of which is reflected in

15. a detail showing the slender stanchions which support the roof girders of the gallery shown below. 16. the gallery between the booking hall, right, and the platforms, left. This serves as the main hall of the station and links the booking hall, the platforms and the restaurant block.

16

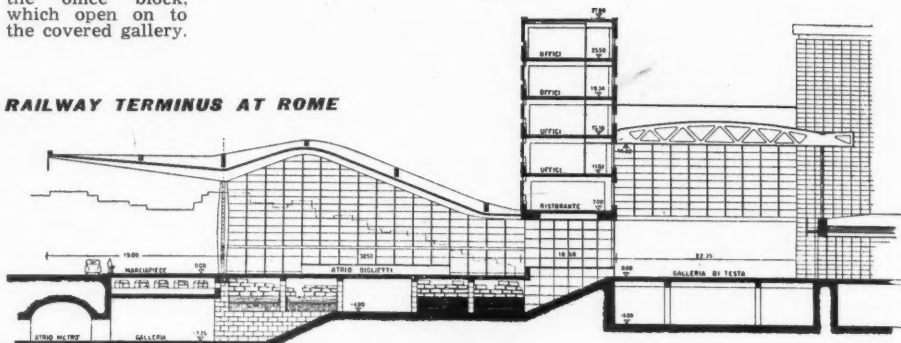


17



17, inside the main restaurant which lies to the north-east of the booking hall. 18, the gallery seen from the Via Marsala. At third floor level at either end of the gallery is a covered gangway connecting the office block, right, with the existing wings, left. 19, the shops and cafés on the ground floor of the office block, which open on to the covered gallery.

#### RAILWAY TERMINUS AT ROME



the roof beams. In it are booking offices for the railway, the C.I.T., postal and telegraph offices, tobacconists, bookstalls, waiting benches, time-tables, etc. All four walls are glazed, giving a full view of the Agger Serviano, of the square as far as the Thermae of Diocletian and through the gallery to the platforms. The floor

is faced with large pale pink granite slabs and the benches are of red granite. The hall is warmed by pipes embedded in the floor.

The gallery behind the office block is sixty-six feet wide. It gives access to the Underground station, an hotel, bank and various shops and forms a covered way be-

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tween the Via Giolitti and the Via Marsala. The upper part of the wall over the platforms is of light metal framing glass panels.

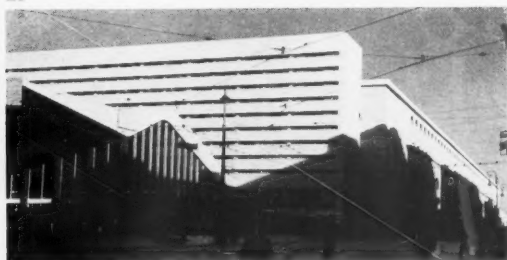
The restaurant building is to the north-west of the Agger Serviano and contains waiting rooms, lunch counters, restaurant, bars and cloakrooms. It can also be entered from the Via Marsala as well as from the gallery.

There is a large basement hall beneath and stretching forward from the booking hall, reached by stairs and escalator, with further restaurants, bathrooms, hairdressers, waiting rooms, writing rooms, cloakrooms, information rooms and ticket offices. This hall leads to the Underground station and to subways to the other parts of the square. At this level the foundations of the Agger Serviano are preserved and are on view.

The structural frame of the office block is of reinforced concrete. Particular care was taken to limit the cross section of the columns to eight inches to make them less visible from the outside. They are placed at ten foot centres. The frame rests on continuous foundation of tufo with a cushion of reinforced concrete to distribute the load. Floors are of brick and concrete with double reinforcement. The block is faced with travertine and granite, pale pink and white. Materials provided for the original design have been used practically in full. The curved roof beams of the booking hall are also of reinforced concrete. They vary in thickness between ten feet where resting on the columns in front to three feet where they meet the office block frame. In order to increase the appearance of lightness the columns are tapered at top and bottom where the bending moment is less. The steel girders carrying the metal roof of the gallery are seventy-two feet long and placed at thirteen foot centres. They are supported at one end on the office block frame and on the other by steel stanchions which are tied at their base by a distribution girder of reinforced concrete fifteen feet above floor level. This girder is in turn supported on reinforced concrete pillars at fifty-two foot centres. These pillars also support the girders of the platform canopies

which are connected by metal-framed roof lights to cover the end platform. To facilitate passenger movement the second row of pillars from the gallery end supporting the canopy girders has been omitted.

20



20, the station approach from the west, showing the link between the earlier wings and the new office block. 21, the glazing below the gallery roof from the south. 22, the façade of one of the existing wings built as part of the 1938 scheme. 23 and 24 show the framed roof lights which connect the reinforced-concrete platform canopies.

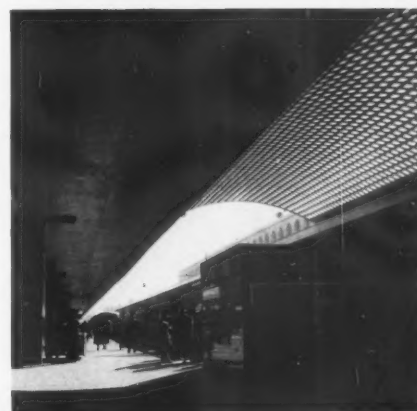
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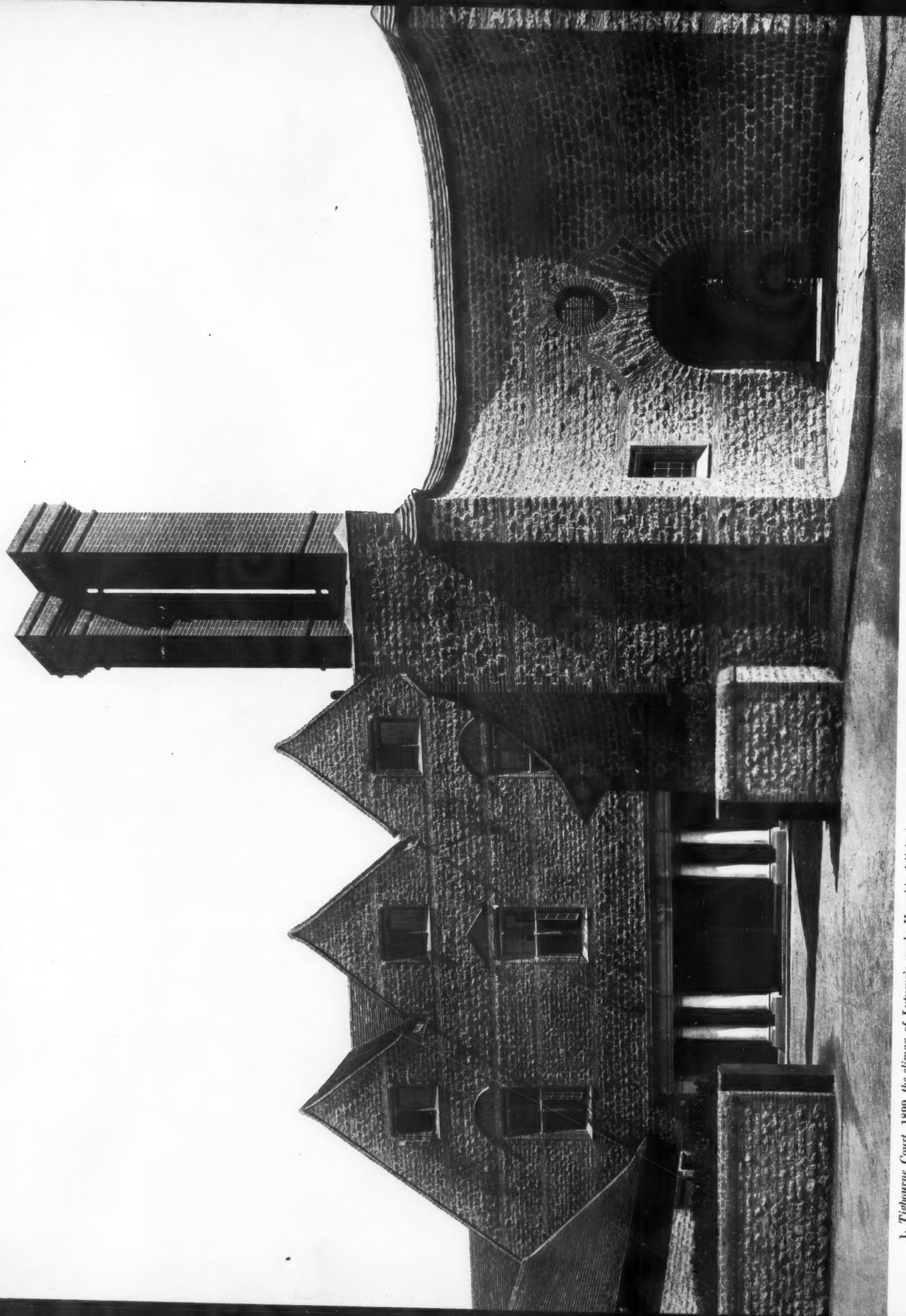


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1, Tigbourne Court, 1899, the climax of Lutyens's work. Here his delight in geometry, and his skilful use of it, are seen at their best. So is the very individual play he made with materials; the diagonally laid bands of tile and the undressed stone set in thick mortar inset with small stone fragments, are typical of the effects he was often to employ, particularly on private houses, throughout his career.

*Professor Pevsner here launches the venture which was referred to in January and March, of publishing regular articles of architectural criticism. The opportunity is provided by the recent memorial publication of the work of Sir Edwin Lutyens. This extensive survey raises a question that has been asked, and answered one way or the other, many times: was Sir Edwin Lutyens a great architect? The memorial volumes make it easier than it has been hitherto to give a reasoned reply. Easier—yet still not easy. For the paradoxes remain—the paradox of the builder of follies who was at the same time the architect of the common man, the paradox of the eccentric who achieved such remarkable worldly success, the paradox of the revivalist in whose work geometry is more insistent than in that of any living architect bar Corbusier, the crowning paradox of the twentieth-century architect of prodigious gifts who contributed nothing whatsoever to the main stream of development in twentieth-century architecture. Discussing the Lutyens case in the light of the evidence presented by Messrs. Hussey and Butler, Professor Pevsner shows how these paradoxes may be resolved. His analysis of Sir Edwin Lutyens's work is criticism on the same lines as the criticism of plays, books and pictures, which in other magazines plays so important a role in keeping the intelligent public interested and informed about the arts. It is badly needed in architecture too, if architectural issues are to be brought more fully within the compass of both specialist and layman.*

## BUILDING WITH WIT

### THE ARCHITECTURE OF SIR EDWIN LUTYENS

<sup>1</sup>'Architecture is building with wit,' *Life*, page 164.

I have been unfortunate in my first impressions of the work of Lutyens. When I came to England in 1930, I was full of unquestioning faith in the new style in architecture—my wife's father had just moved into a house built for him with a flat roof and horizontal windows, and I was working on a course of lectures on the Development of Architecture from the nineteenth into the twentieth century, a subject wholly unconsidered then amongst art historians in the German universities. The first two buildings by Lutyens which I saw were Grosvenor House in Park Lane and No. 68, Pall Mall, the one big, red and utilitarian, with unjustifiable bits of classical decoration round a few windows and classical stone-faced hats on the corners, high above the ninth floor, where nobody can see their details; the other tactlessly tall next to St. James's Palace and the Marlborough House Chapel, with segment-headed and segment-footed windows suddenly breaking out on the second upper storey, in a rhythm different from all the other storeys, and with silly tricks in the detailing of the pilasters on the ground floor. I remember, these disappearing pilasters irritated me particularly, even more than the

fact that an architect should still use pilasters and columns and pediments at all in a building of 1928.

In the meantime, thanks to the twenty intervening years, I do not find them silly any longer, and I know that there is more to Lutyens than belated classical revivalism. What is there to him? This is the moment to try and assess his qualities and his position in British architecture; for the long announced Lutyens Memorial has appeared, three folio volumes on his work and one quarto volume on his life, published by *Country Life* and Scribner's with a biography of 600 pages by Christopher Hussey, 115 pages of analyses written by A. S. G. Butler, 338 pages of working drawings and 1,000 photographs.\* No English architect other than Wren has ever been recorded like this. Does Lutyens deserve such a magnificent display? Everyone knows the danger to the fame of a painter of too comprehensive a commemorative exhibition

\* Their arrangement, I am bound to say, but wish to say in the smallest print, is not perfect. The serious student will want cross-references from photos to drawings, from the chronology to the illustrations, from the biographical volume to the plates and drawings, and also a strictly chronological order within each volume of the plates. And as no author is happy unless he can find a mistake in another author's book, may I be permitted to say that the Hudson, founder of *Country Life*, did not live at No. 13, Queen Anne's Gate, as stated by Mr. Hussey on p. 182, but at No. 15.

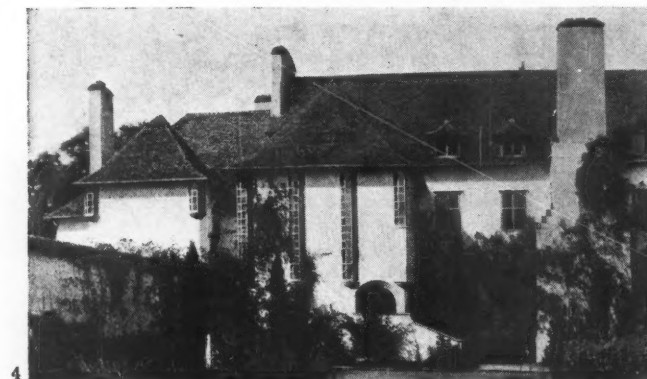
Munstead Wood, 1896, Lutyens's first important job, which was commissioned by Gertrude Jekyll, the famous garden-designer, for herself.



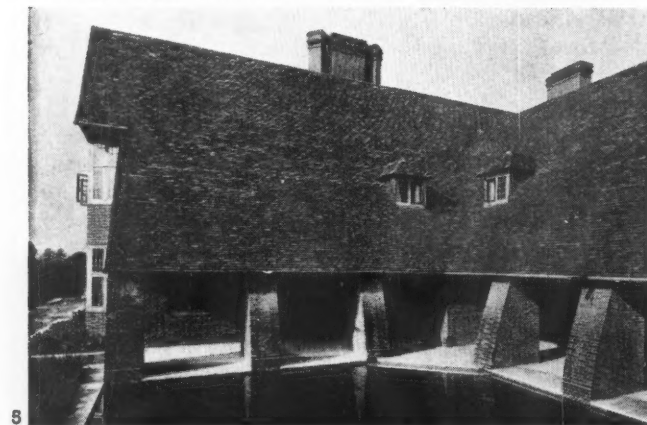
Orchards, 1898, an example which shows the influence of Voysey on Lutyens.



Varengville, 1897, a rare example in Lutyens's work of Art Nouveau influence.



Tank Court, Folly Farm, 1912, one of Lutyens's most impressive works, because of the vigorous contrasts between elementary geometrical shapes.



after his death. Is Lutyens here being put into the same danger? Certainly not, if Mr. Butler is right and Lutyens is indeed 'the greatest artist in building whom Britain has produced.' But Mr. Butler, in his remarkably close and penetrating analyses of Lutyens's buildings, is so enthusiastic that he sometimes provokes more than he convinces. Mr. Hussey, on the other hand, in his *Life* never loses his head, though he also has evidently been deeply impressed by Lutyens the man and the artist. His volume is a masterpiece, and one does not know what to admire most in it—the consummate tact with which he manages what had to be said about his hero's private life, the wisdom with which he places his work in relation to its period, or the sustained fervour which glows through all his pages and flashes up brightly where peaks are reached in the architect's *œuvre*.

Only Mr. Hussey's peaks are not as a rule mine, and even after a careful study of his book I found myself left with many an embarrassing doubt. How great was Lutyens? And how important in the history of architecture? Speaking as an historian, his importance in the development of European architecture seems to me without any doubt less than, amongst his British contemporaries, Voysey's, and his originality less than Mackintosh's. Yet there is so far no more than a small preliminary book in existence on Mackintosh (and that not in English), and no more than a small book in preparation on Voysey.

Leaving aside for the moment all questions of aesthetic achievement, one can say that the Lutyens Memorial has a right to be so much bigger, because Lutyens's work is so much bigger in total volume and in individual buildings, and because his success was so much bigger and maintained over so much longer a period.

So the question arises: Why was Lutyens so immensely successful? He was not the type necessarily cast for professional success, as Sir Herbert Baker was, 'tall, manly, athletic, outwardly calm' (in Mr. Hussey's words), captain at cricket and football at his public school, and in later life outstandingly good on committees. Lutyens was the son of a retired army captain and an Irish girl. His father devoted his time to painting and hunting. His mother was busy trying to bring up fourteen children on little money. Edwin Landseer Lutyens was the eleventh child. He was born in 1869 (Voysey 1857, Baker 1862, Mackintosh 1868). His education was 'irregular and scrappy.' At sixteen he went up to the Royal College of Art to study architecture. He did not complete the course, and was articled in 1887 to Ernest George & Peto. Senior assistant at the time was Baker. Lutyens was lazy, disliked sketching, but had a knack of 'quickly absorbing all that was best worth learning' (Baker). He left the office after six months and set up in practice on his own. He was twenty years old then.

The credit of having discovered him belongs to Gertrude Jekyll, the formidable garden-maker, 'frightening but kind and wise,' says Mr. Hussey from experience. She commissioned Lutyens to design Munstead Wood, a house for herself. It was built in 1896, not his first building—he had done cottages, lodges and additions to houses before, and in 1896 claimed earnings of about £1,000 a year—but it was



6 St. Jude's, Hampstead Garden Suburb, 1910, one of the most successful English churches of the twentieth century, unafraid of mixing seemingly discrepant styles.

his first building of consequence. In 1897, moreover, he married Lady Emily Lytton, daughter of the first Viceroy of India. It was the happy end of a romantic love-story, but it also meant connections in a society in which to be a protégé of Gertrude Jekyll was a valuable asset too. And while Baker's success was due to a large extent to his 'accommodating architectural conscience and keen sense of practical politics,' and of course his sentimentality—Lutyens said of Baker that he made architecture 'the handmaid of sentiment' (*Life*, 285)—Lutyens's line was to be the perennial *enfant terrible*. How much of this was spontaneous, how much methodical will always remain doubtful. Mr. Hussey calls him 'genial, whimsical, disconcertingly irreverent and facetious. . . habitually schoolboyish and often impish,' Miss Sackville West 'the most delightful, good-natured, irresponsible, imaginative jester of genius.' His jokes never ceased, and ranged from the most atrocious puns to brilliant flashes of genius. He could ask a poor clergyman called Western at a Viceroy's party at Delhi whether he was a relation of the Great Western, but he could also say that the Delhi buildings in their finished form after all the exasperating quarrels with Herbert Baker were his Bakerloo. Herbert Baker on his part found Lutyens's humour, which he had liked when they both worked at Sir Ernest George's, 'wearisome in repetition, and less becoming to mature manhood.'

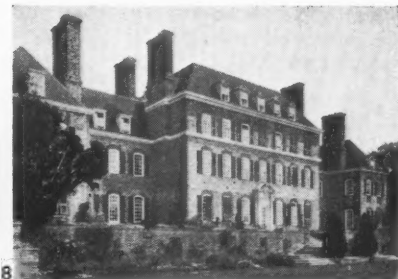
But in England the eccentric has as good a chance of social success as the strong, silent, efficient man. Still, it remains remarkable that eccentricity can be a success even in the territory of such material professional accomplishments as architecture. One can understand that in Lutyens's early years, the years of the Arts and Crafts and Art Nouveau and the picturesque cottage, eccentricity could pass for originality, the most desirable quality at the time. But later when Edwardian Palladianism and Classical Re-revival had replaced the Arts and Crafts, and when Lutyens designed in these ac-

cepted styles—is one to assume that his clients did not notice his most eccentric details?

The motive, I think, lies deeper. It is connected with the fascination wrought on the British more than any other race by the folly in architecture. Nor need the British be ashamed of that fascination; for to appreciate folly and a folly a degree of detachment is needed which is only accessible to old and humane civilizations. Sir Edwin Lutyens was without any doubt the greatest folly builder England has ever seen. Castle Drogo beats Fonthill, the Drum Inn at Cockington beats Blaise Castle, and the Viceroy's house at Delhi beats any other folly in the world. Castle Drogo was to be three times the size it finally assumed, and it is overwhelming as it now stands on the steep edge of Dartmoor. Besides, while Wyatt's and Nash's follies were put up in flimsy materials, for Lutyens only the best and most enduring was good enough. 'The Viceroy,' he wrote in 1913, 'thinks only of what the place will look like in three years time, three hundred is what I think of' (282).

How odd it seems to us, a mere twenty years later, that such self-confident displays of imperialism could have been made at all. Yet Lutyens himself was not an imperialist, as Baker for instance was. In fact he was not interested in politics at all. He disliked them. 'Politics,' he wrote, 'ought to be included within the Corrupt Practices Act' (269). A committee in his mind was 'all sorts and kinds of horrible, ignorant and unsympathetic men' (186), and a democratic government one 'that can only work through compromise, leaving its conscience in the hands of accountants' (380).

Not for him then the commissioning ministry or board of directors. His ideal client was the rich man, preferably self-made or at least not too distant yet in descent from the adventurous stage of self-made-ness. And Lutyens was extremely, uniquely fortunate in working at the very last moment in British history when such clients were about. Just as he could complete his work at Delhi five minutes before closing time, so houses of the size of Castle Drogo, Marshcourt, Great Maytham, Nashdom Taplow, Temple Dinsley were only possible in that last Indian Summer of unashamed British prosperity before the First World War. A tendency towards the colossal in size seems to go with the mood of the eve of disaster. So it was at the end of Imperial Rome, so in the years of Louis XVI. But whereas Ledoux's dreams of huge axial compositions for no utilitarian purposes remained on paper, Lutyens's actually rose in solid stone into the air of England and India.



7, Nashdom Taplow, 1905 and 8, Great Maytham, 1909, two houses which illustrate the scale of Edwardian domestic jobs.

Given the huge scale on which it was permitted to Lutyens to work, and given his universal success, it remains admirable that his work is never, or hardly ever, dead (I except the British Pavilion at Rome of 1910 and the British Embassy at Washington of 1930), as the contemporary campuses and civic centres of the United States so often are. This is no doubt due to two causes which seem at first to exclude each other, Lutyens's *élan vital* and his immense care over details. The many pages of detail drawings in the Lutyens Memorial show clearly how meticulous a worker he was, and how the naughtiness of so many of his motifs is by no means the outcome of faith in accident. Lutyens admired the Norman Shaw of his later period, that is of Bryanston and Chesters (17)—Shaw had set an example for Lutyens of how an architect of immense picturesque gifts can in later life find a way to Palladio and Wren—but he objected to the manner in which at Chesters all details are 'left go lucky beyond a point' (120). Yet Chesters must have impressed him more than any other nineteenth century building. Philip Webb he discovered in 1891, and also admired greatly. Voysey is nowhere mentioned in Mr. Hussey's *Life*, although his influence on, say, Orchards seems to me beyond doubt—see the bay window with its unmoulded mullions and transoms (a Shaw motif originally) and the batter of the buttresses. Another influence worth considering is that of E. S. Prior on the plan of Papillon Hall with four wings projecting diagonally from a central core. The common source is of course again Chesters, but Lutyens's solution is nearer Prior's than Shaw's. And Prior also possessed a liking for rather crazy primeval details which Lutyens shared.

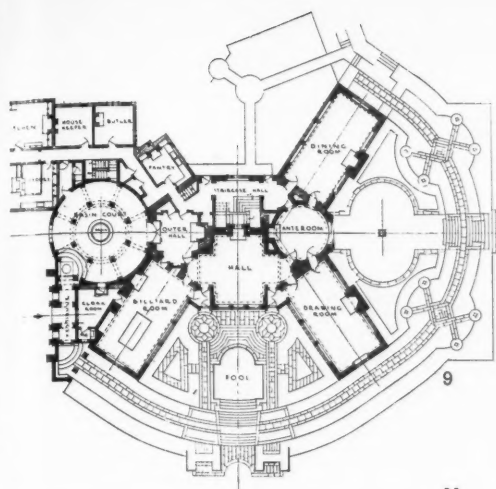
But Papillon Hall of 1903 has got one feature which neither Voysey nor Prior would have introduced: the circular anteroom and the circular Basin Court with its colonnades. This introduction of motifs which seem to have nothing to do with each other, this playing-up of contrasts sometimes just to amuse, but sometimes also *pour épater le bourgeois*, is in my opinion one of the most characteristic features of Lutyens's style. How he enjoyed such bits as the specially low-silled 'crawling window' in the nursery at Middleton Park, or the one Victorian window left unaltered when he converted Ashwell Bury, or those disappearing pilasters which annoyed me so much twenty years ago at 68, Pall Mall, and which also occur in the Midland Bank in Poultry, and even in the British Embassy at Washington, those pilasters which start innocently with Doric bases and then fade away in the close pattern of rustication or brick courses, until much higher up they suddenly reappear and end in correct capitals as if nothing had happened. How he enjoyed adding in completely different styles to houses he had built himself—Crooksbury, the earliest of all his works, was originally in the Caldicott style of picturesque cottages (as Mr. Hussey calls it). The addition of 1899 was Lutyens's first effort in a William and Mary, of Shaw derivation. At Folly Farm, on the other hand, the house of 1905 was neo-Georgian, the bold addition of 1912 Tudor with a vast steep roof and hugely battered piers. The entrance side of Homewood at Knebworth of 1901 (not illustrated in the Memorial) has a big classical doorway and weatherboarded

gables above. Little Thakeham of 1902 is Tudor, but the hall has broad stone doorways towards the staircase with Gibbsian surrounds.

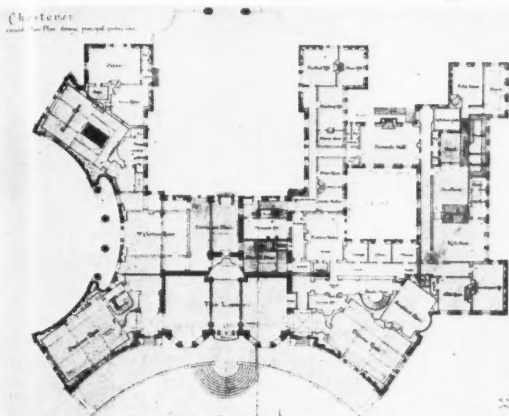
What made Lutyens so fond of this Palladian motif of blocks of alternating sizes for doors and window surrounds? It is due no doubt to the same delight in geometry as the circular room and the circular court at Papillon Hall. The square, the rectangle, the circle occur everywhere in his work. The voluptuousness of the long, swaying curves of the Arts and Crafts and Art Nouveau and the single-minded dynamic intensity of the pointed arch of Gothic and Eastern tradition were equally abhorrent to him. When the Viceroy pleaded for pointed arches at Delhi instead of round-headed ones, because these would not be in harmony with the Indian past, Lutyens wrote: 'God did not make the Eastern rainbow pointed, to show his wide sympathies' (296). His first conception of the focal monument for graveyards of the First World War in France was 'a solid ball of bronze' (373), and wherever one looks in the three volumes of plates of the Memorial, one is struck by elementary geometrical patterns—the squares of different materials in the Westminster Housing Scheme, the black and white marbles in the paving of entrance and staircase halls, the quadrant front of Gray Walls, the exactly semispherical domes of Delhi, the Midland Bank in Poultry and the British Pavilion for the 1928 exhibition at Antwerp. This worship of geometry could in some later works lead to most complex and ingeniously thought out ratios of proportions. The memorial arch of Thiepval is as geometrically perfect as any Modulor-designed exercise of Le Corbusier. 'In architecture Palladio is the game,' wrote Lutyens in 1903 (121).

But where Lutyens's geometry seems to be most successful is where he uses it not for the sake of perfection but for the sake of contrast and surprise. Thiepval and the Poultry façade of the Midland Bank reveal little of the best in Lutyens. For that you have to go to such early houses as Tigbourne Court of 1899. The contrast between the pertly up-curved front wall carrying two absurdly tall chimneys set diagonally, and the façade itself further back with its low Tuscan loggia and its sheer wall above with windows set wide apart and straight gables on top is irresistible. So is the geometry of the south front of Deanery Garden of 1899, that of the Tank Cloister at Folly Farm of 1912, and also that of the pools and fountains at Delhi, though here and even more, still later, at Liverpool cathedral the play with geometry gets dangerously near the continental jazz idiom of 1925—a curious entirely independent parallelism.

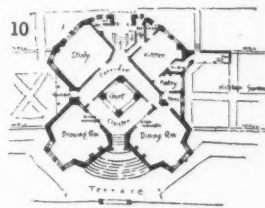
If I look for continental parallels to what is most valuable in Lutyens's work, I find some similarity with Berlage (born 1856) and his Dutch successors, especially de Klerk (born 1884). Here is the same origin in picturesque traditions, the freedom of handling, the faith in elementary cubic forms, the occasional jazziness of detail, and also—and this introduces two more qualities essential to Lutyens's character—the keen interest in a variety of materials and in craftsmanship. But whereas Berlage and de Klerk and then Dudok were led by their *lusus geometricus* to a complete renunciation of period ties,



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**Influences** Although not enthusiastic about his detailing, Lutyens admired the work of Shaw's later period such as 11, *Chesters*, 1891, and the influence of its plan is clearly

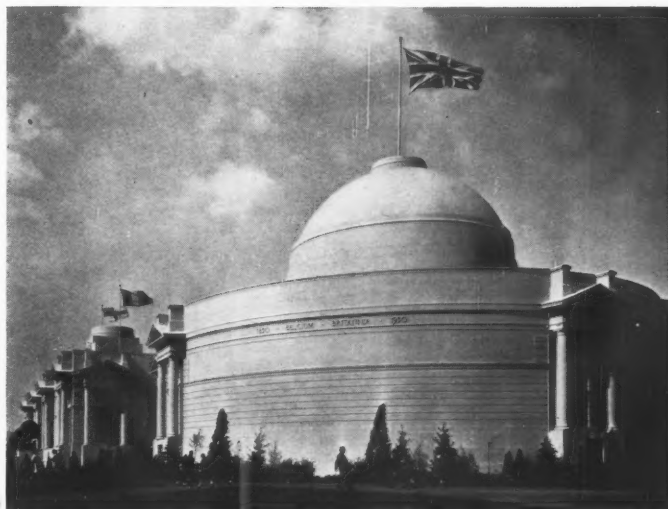


seen in 9, *Papillon Hall*, 1903. Another influence to consider is that of E. S. Prior's several plans with diagonally projecting wings. The one illustrated, 10, is from *The British Architect*, 1899.



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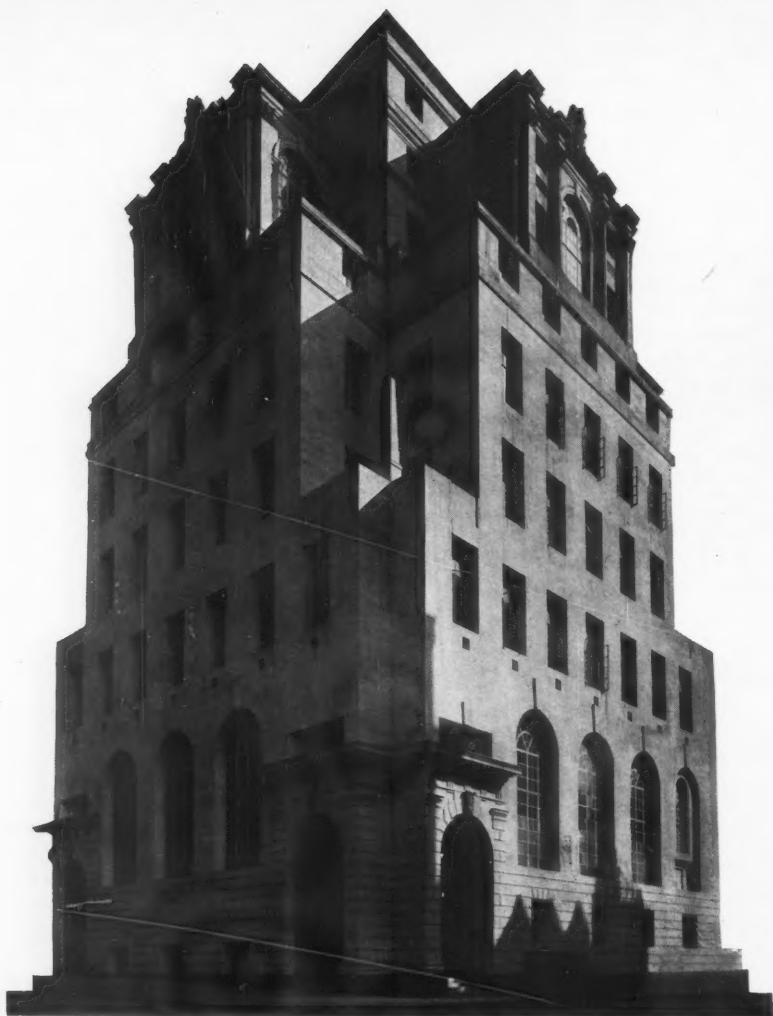
**playfulness** 12, the *Midland Bank*, Poultry, London, 1924. The disappearing pilaster crops up in several of Lutyens's works; as well as here on the *Midland Bank*, Manchester, at 68, Pall Mall and even on the *British Embassy* at Washington.



13, 14

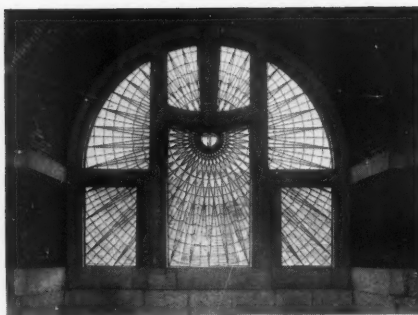


**geometry** 13, the *British Pavilion* at the *Antwerp Exhibition*, 1928, and 14, the *Somme Memorial*, Thiepval, 1924. Here Lutyens's geometry is harsh and rigid, but in the *Memorial* arch the contrast between space and solid is undeniably impressive, and the proportions are worked out to the last inch with consummate ingenuity.



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**geometry** 15, the Midland Bank, Manchester, 1929. This might be called a secular application of the rigid geometry of the Thiepval Memorial arch. 16, the Chapel of Our Lady of Dolours, Liverpool Cathedral. Lutyens's play with geometry here dangerously approaches the jazz idiom of the twenties. 17, Campion Hall, Oxford, 1934. The Library steps are one of the most endearing examples of the fun Lutyens had with space; with their complicated structure devised for the only purpose of reaching a book from the upper shelves. 18, Hestercombe, 1904, and 19, the Viceroy's House, Delhi, 1912-31. Unrelenting geometry is relieved in the earlier garden by richness of texture in both stone and vegetation. The screen to the Viceroy's tennis court shows Lutyens at, perhaps, his most insensitive.



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**materials** 20, Marsh Court, 1901. Built of chalk with flint, stone and brick inset, and on a scale only possible during the last upsurge of post-Victorian prosperity, it shows Lutyens's delight in materials at its most exuberant.

**space** 21, Castle Drogo, 1910-30. Lutyens in his really grand manner, limbering up for Delhi, and for sheer theatre, beating any set for Hamlet ever devised. 22, Little Thakeham, 1902, a series of platforms in space, with the stairs

21



reaching up between them. The low ceiling in the background and the two small windows are devised to give that cottage-cum-palace effect that Lutyens aimed at more than once (viz. the grandiose entrance at Middlefield opening on to the blank wall of a passage). 23, Viceroy's House, Delhi, 1912-31. The effect of immense weight in excellent contrast to the obliquely seen and slender column in the distance.



23



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**fairy tales** 24, the Drum Inn, Cockington, 1934. A cottage inn and one that will appeal immensely to every child and all grown-up habitués of Disney films and pantomimes. There was much naivety in Lutyens's approach to design.

**fairy tales** Even the Viceroy's House at Delhi, 25, with all its piled-up stone and all its emphasis on geometry is a fairy tale. Those to whom a cottage must look like the Drum Inn will recognize in the Viceroy's House their beau-ideal of a sovereign's palace. The three tin-soldiers in the photograph are almost unbelievably appropriate. The Viceroy's House served its real, yet so unreal, purpose for exactly 16 years after its completion in 1931. After the sovereign's palace and the thatched cottage, Castle Drogo, 1910-30, 26, is just what the child and the man-in-the-street would demand of a 'medieval castle.' This knight's castle par excellence was originally meant to be three times its present size.



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Lutyens's art was petrified by the cold, never wholly relaxing grip of Palladianism.

As for variety of materials, one of Lutyens's earliest buildings, a pair of loggias at Park Hatch, Hascombe, is described as of Bargate stone, Horsham slates, timber in the gables, and pavings of ironstone and of brick. Marshcourt is mainly of chalk, but has an admixture of stone, flint and brick. At 42, Cheyne Walk, a corridor is wall-papered with varnished sheets of *The Times*. As for craftsmanship, the otherwise not very interesting building at Magdalene College, Cambridge, has the hand-rails of its five staircases designed all completely differently, and with details challenging the skill of any craftsman. At the Midland Bank in Poultry every course of stone had to be 0.273 inch less in height than the one below. The variety of wrought-iron balustrades to staircases is equally remarkable. But Lutyens's liking for delicate and transparent ironwork is characteristic not only of the fun he had with materials and their shaping by craftsmen, but also of the fun he had with space. The library steps at Campion Hall, Oxford, are one of the most endearing examples of this spatial fun. They get you up six steps as any old ladder, but are at the same time spatially and geometrically no less entertaining than a young person's tricks in designs for children's playgrounds are nowadays.

Lutyens's handling of space has not in the past been sufficiently appreciated. The staircase at Little Thakeham is almost as ingenious with quite simple geometrical means as the staircases of the eighteenth century which we admire in Germany and Austria. Equally ingenious is the way in which at Ashwell Bury a staircase in a comparatively small well is made to look large. The vaulted corridors at Castle Drogo have a spatial force which Mr. Hussey rightly compares with Piranesi's. No wonder that Lutyens on his first journey to Italy got excited about the staircases of Genoa. 'The lavish space given away in staircases makes me sick with envy,' he wrote in 1909 (197). If the architects of Genoa had seen the size of Lutyens's staircases at Delhi ten or twenty years later, the envy would have been theirs.

England has never been particularly keen on ingenious or monumental stairs, and Lutyens's are amongst the finest she has produced. The English reluctance to give staircases enough space is connected with the practical, pragmatic, utilitarian side of the national character. But Lutyens had no patience with the utilitarian, and if perfect architecture is defined as a blend of art and use, then Lutyens was certainly not a perfect architect. 'Lutyens was not interested,' says Nathaniel Lloyd, 'in what held the building up or composed the core, heated or drained it. . . . The office dealt only in surfaces' (493). This is why so often Lutyens's buildings, in spite of all their good solid materials, seem unreal. The best of them are indeed too good to be true. The Drum Inn at Cockington is the cottage straight out of the pantomime, Castle Drogo is a fairy castle, the Viceroy's house a fairy palace, and New Delhi as planned by Lutyens a fairy city. No wonder he could not stick Geddes ('he seems to have talked rot in an insulting way,' 336). Lutyens was as immune against the

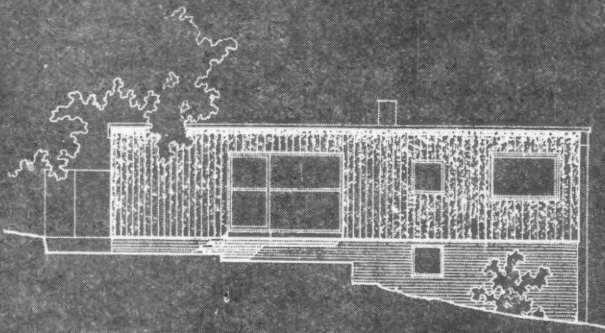
social as he was against the structural aspects of architecture. Hence he believed only in axial, symmetrical 'Beaux Arts' planning and never considered the visual variety and intricacy resulting from functional planning, although his architecture looks so much as if he should have been able to appreciate picturesque layouts. But no—in the Royal Academy plans for London which were essentially his, he proceeded to duplicate Burton's screen and Apsley House to get symmetry into the new roundabout at Hyde Park Corner, and to duplicate the Deanery of St. Paul's to achieve the same result for the side wings to the left and right of the façade of the cathedral. When Lutyens saw the Acropolis for the first time, he was disappointed. 'The Parthenon has no relation to its site,' he wrote, 'no dramatic sense such as Romans had' (539).

That disgruntled reaction to Athens after Rome is a familiar experience with travellers of untrained visual sense. With a distinguished architect it is curious. But it again helps to explain Lutyens's great popular success. The Lutyens of the Delhi plan, the Viceroy's house, Castle Drogo and the Drum Inn is indeed a laymen's architect. His grandeur, his banality, his jokes—there was everything there to please the common man. 'Directly you introspect, you may be sure you are wrong,' he could write to Baker (181). Soane would not have written that, nor would Michelangelo.

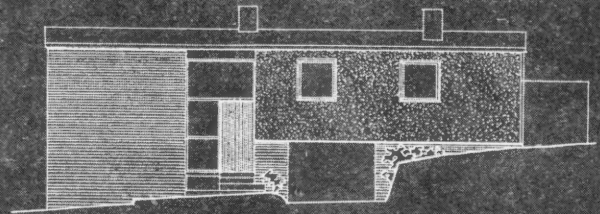
Yet in his geometrical speculations he was clearly working along lines concealed from the layman, and it is they that betray the inner core of seriousness and intellectual effort in him. That is why Mr. Butler in his notes to the folio volumes of the Memorial gives so much space to them and analyses them so patiently. Lutyens's supreme faith was in the *divina proporzione*. He did not really care for the Empire, except inasmuch as it was a big client. Nor did he believe with his whole personality in God. 'There is that in art which transcends all rules—it is the divine,' he wrote to his wife in 1907. 'If only the nations would go for beauty with their whole resource and energies . . . the millennium would be ours ! ! . . .' (140).

In such words he seems to be transported far above the conception of architecture as a game to be played with gusto. Yet the two seemingly contradictory aspects of Lutyens's mind are *au fond* one thing. They are both expressive of art for art's sake, or rather architecture for art's sake. Now architecture for art's sake is for good reasons the *bête noire* of the twentieth century architects of all schools. It is therefore quite conceivable that, if once again in the distant future a period may dawn in which the architect can afford to, and will want to, be an artist as elevated above social and structural interests as 'Michel' angel' divino,' Lutyens's wisdom will be recognized as effortlessly as I recognize his folly. In his serious mood he is so completely divorced from all that architects of the last fifty years have striven for, that a balanced judgment of his place in history is perhaps impossible. I am fully aware of that. All I can claim for these pages is that they have emphatically not been written to debunk but to arrive at a judgment at least not consciously biased.

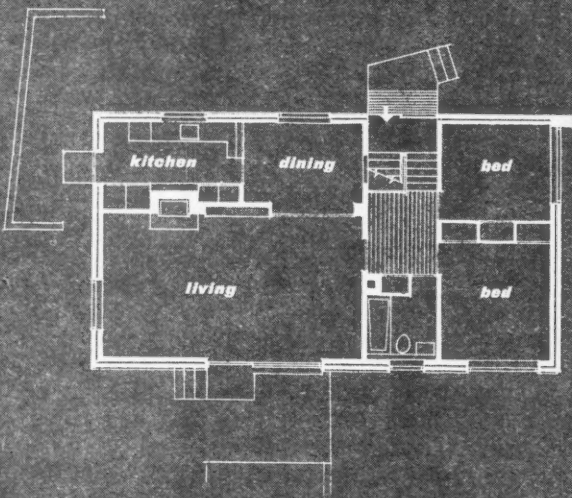
**HOUSE AT FITZROY PARK, HIGHGATE**



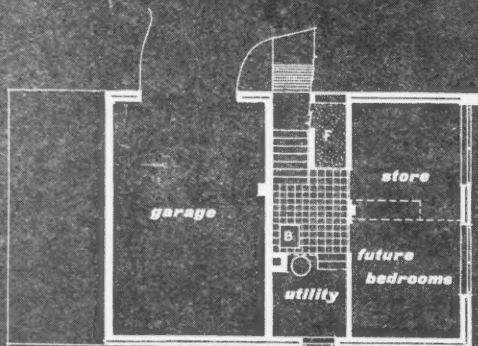
south west elevation



north east elevation

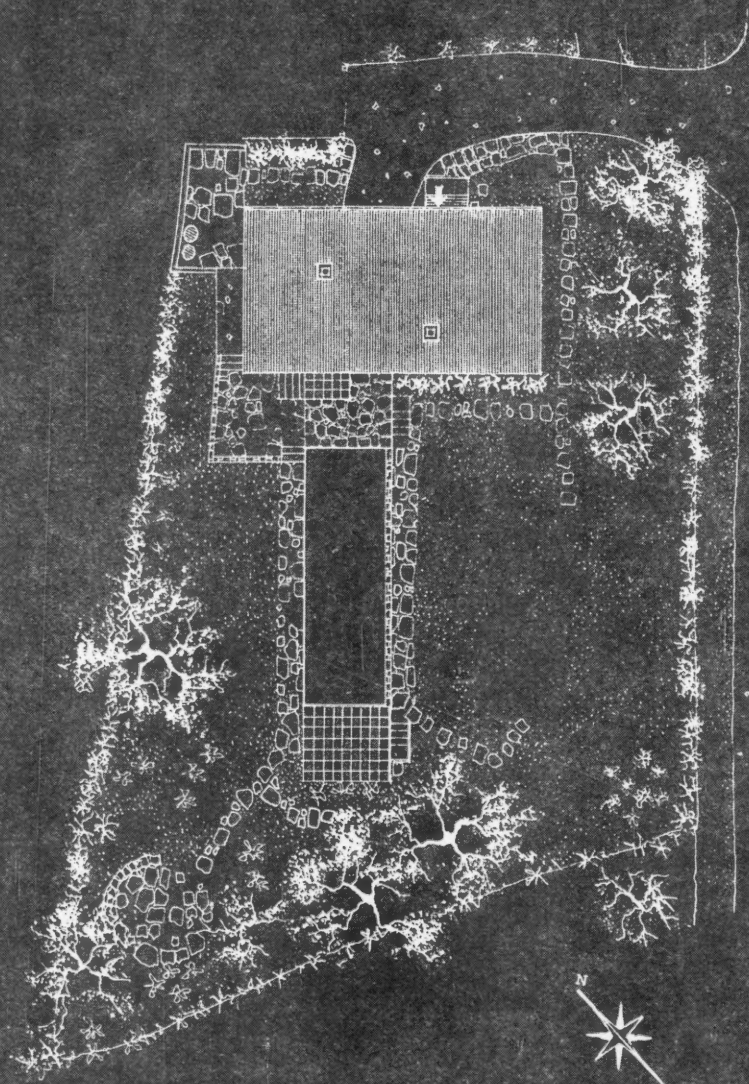


upper floor plan



lower floor plan

scale: 1/16 in. = 1 ft.



site plan





## HOUSE AT FITZROY PARK HIGHGATE

JUNE PARK: ARCHITECT



1. the house seen from the west showing the steps down from the main living room to the garden. 2. the house from the north.



The site on Highgate Hill, which is less than a quarter of an acre, faces south-west across open space towards Hampstead Heath and the spire of Hampstead Parish Church. It slopes steeply towards south-west and south-east. On it there were some partly bombed greenhouses and the excavation which formed them has been used to make the at present incomplete garage. One remaining greenhouse will eventually be pulled down and the excavation will form a sunk garden and pool.

The plan consists of a living room, dining space, kitchen and two bedrooms and bathroom on the upper floor. The lower floor is at present left in a very rough state but can by the addition only of finishes and fittings be made in the future into two further bedrooms and a utility room or cloakroom.

The slope of the ground has been used and the living



3



4

3, the main living room window and sliding door. This room was raised above ground level to give a view over nearby trees to Hampstead Heath. 4, looking from the living room towards the serving hatch in the dining space. 5, view from the living room across the hall to the south-west bedroom. 6, the living room looking through the folding doors to the dining space.



5



6

room raised sufficiently for the view over the adjacent trees to be seen. There are steps down from the living room window to the upper garden. The kitchen door is at ground level and the front door is on the half landing between the two floors. The upper floor was restricted to less than a thousand square feet and the intention has been to achieve the largest possible living room by cutting out passages and reducing bedrooms to a minimum. The boiler and fuel store are on the lower floor and fuel is delivered through a chute beside the front door. There are double folding doors between the living room and dining space and a hatch with two-way cupboards between the dining space and kitchen. Tanks are under the highest part of the roof over a lowered ceiling to the bathroom.



7

The construction is eleven inch cavity brick using as finishes stock bricks, cedar boarding and Tyrolean finished rendering. The roof consists of timber joists at two foot centres on a three degree one-way pitch covered with strawboard decking and a patent bituminous felt and with granite chip finish. The slightly sloping ceilings of the upper floor are covered with plasterboard. The floor of the upper storey is of mass concrete on the solid reinforced concrete over the garage and joists over the remainder. Floor finishes are cork tiles, pitch mastic quarry tiles and deal boards. Some Carda double-glazed horizontal pivot hung windows have been used and there is a sliding french door in the living room.

External paintwork is white except the front door and windows on the rendered wall which are terracotta. The cedar is oiled. The entrance hall is fair face brick distempered. Fair face rough stocks have been used for the fireplace wall of the living room. Other walls are plastered and distempered white or pale colours with one wall in each room picked out in wallpaper either striped or checked. Internal paintwork is mostly white with some doors picked out in different shades of grey or yellow.



7. looking from the kitchen through to the dining space. 8. the south-west façade. The timber is oiled cedar and window frames are painted white. 9. the living room fireplace, which is finished with fair face rough stocks. The wooden niche frames are painted white.

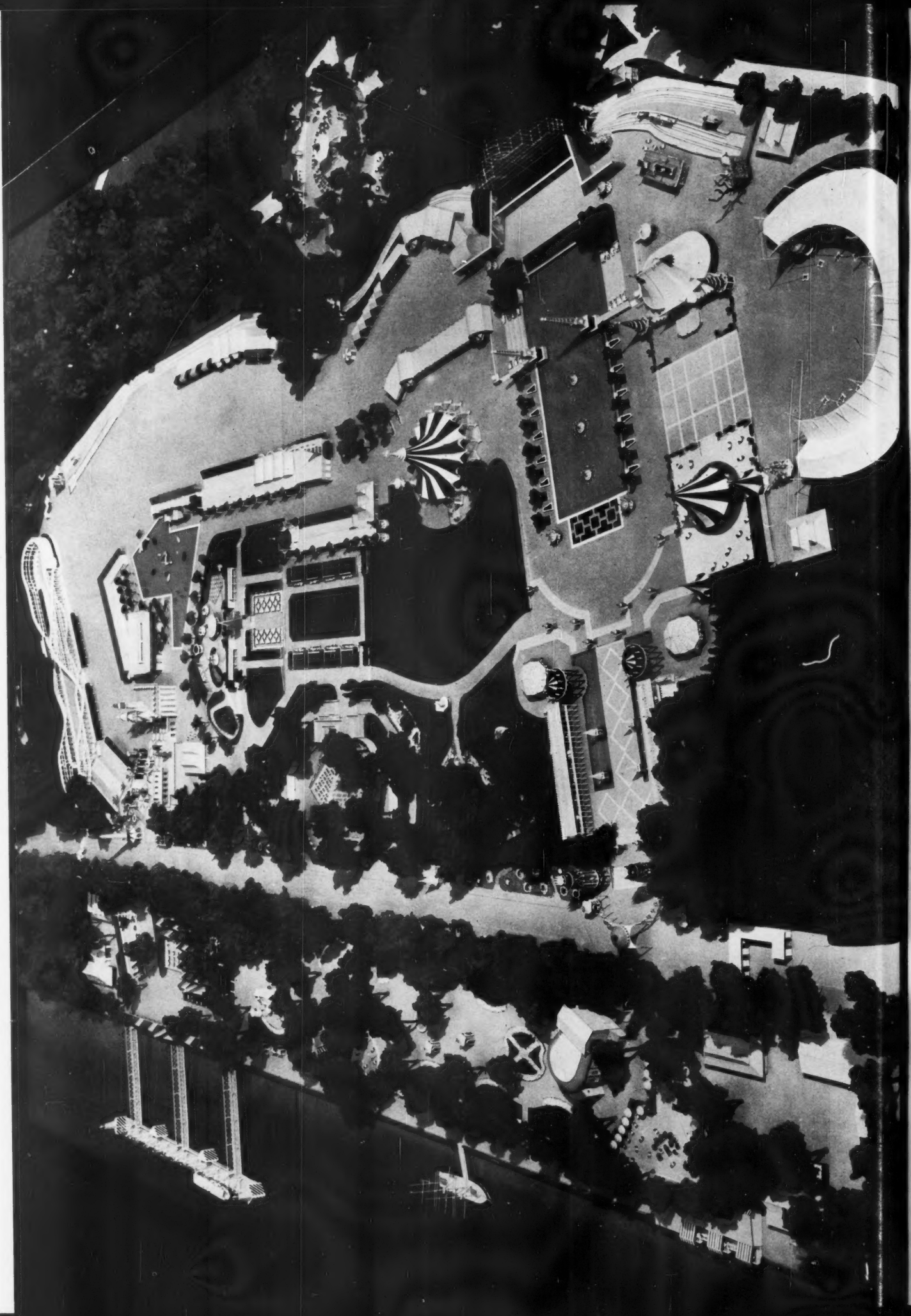
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9

ARCHITECTURAL PREVIEW

# FESTIVAL PLEASURE GARDENS BATTERSEA PARK



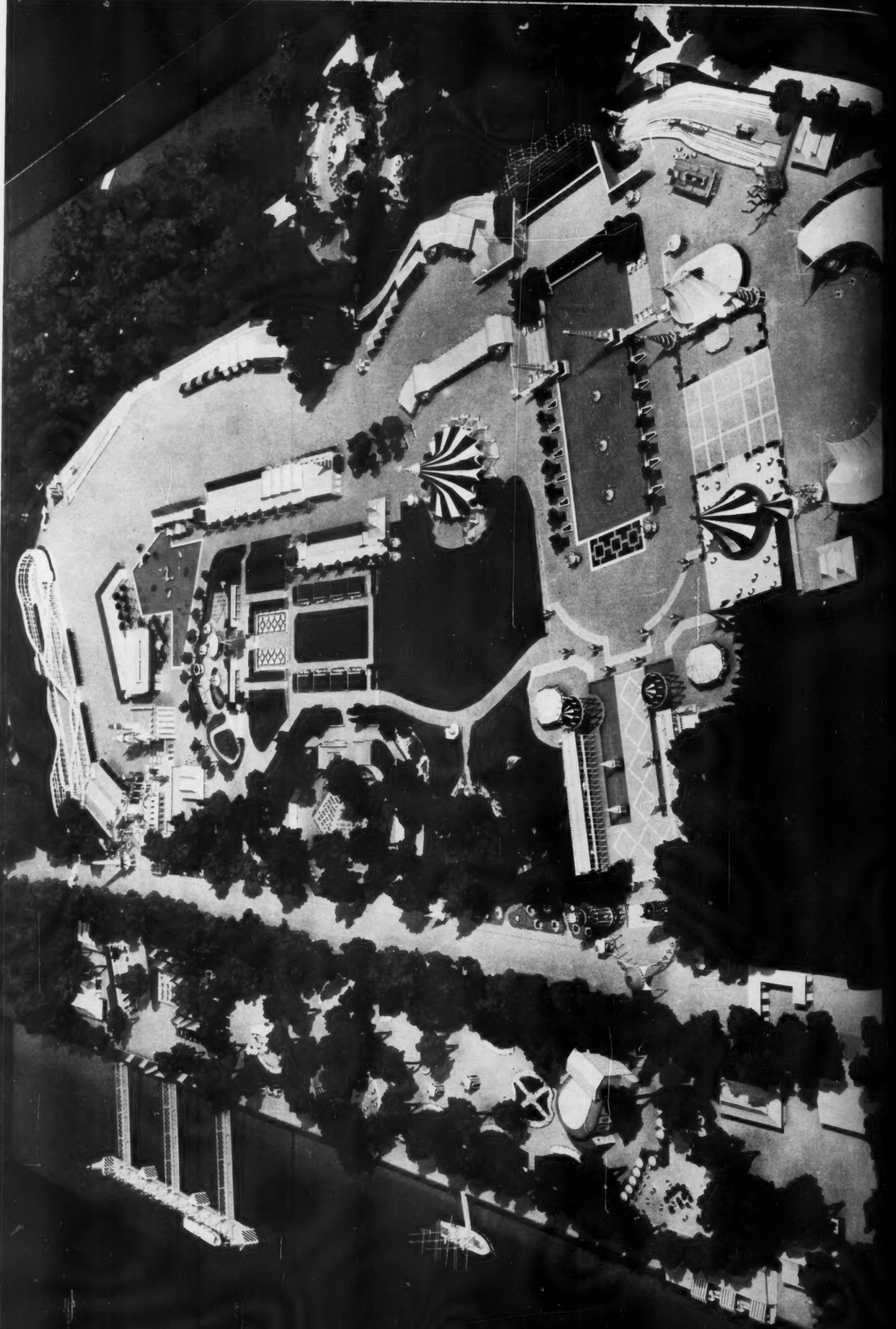


As a complement to the Festival of Britain South Bank Exhibition the pleasure gardens in Battersea Park aim to 'provide facilities for entertainment, refreshment and relaxation.' Approached by the river as well as by road the gardens occupy some thirty-seven acres and contain a theatre, which will be permanent, in addition to temporary pavilions and pagodas, shops and

restaurants, flower-gardens and terraces; fountains and artificial lakes, a grotto, a zoo, a miniature railway and fun-fair entertainments of all kinds. At night the gardens will be illuminated and London will possess for a short while an evening entertainment reminiscent of the vanished pleasure gardens of Cremorne and Vauxhall whose names are commemorated at Battersea Park.

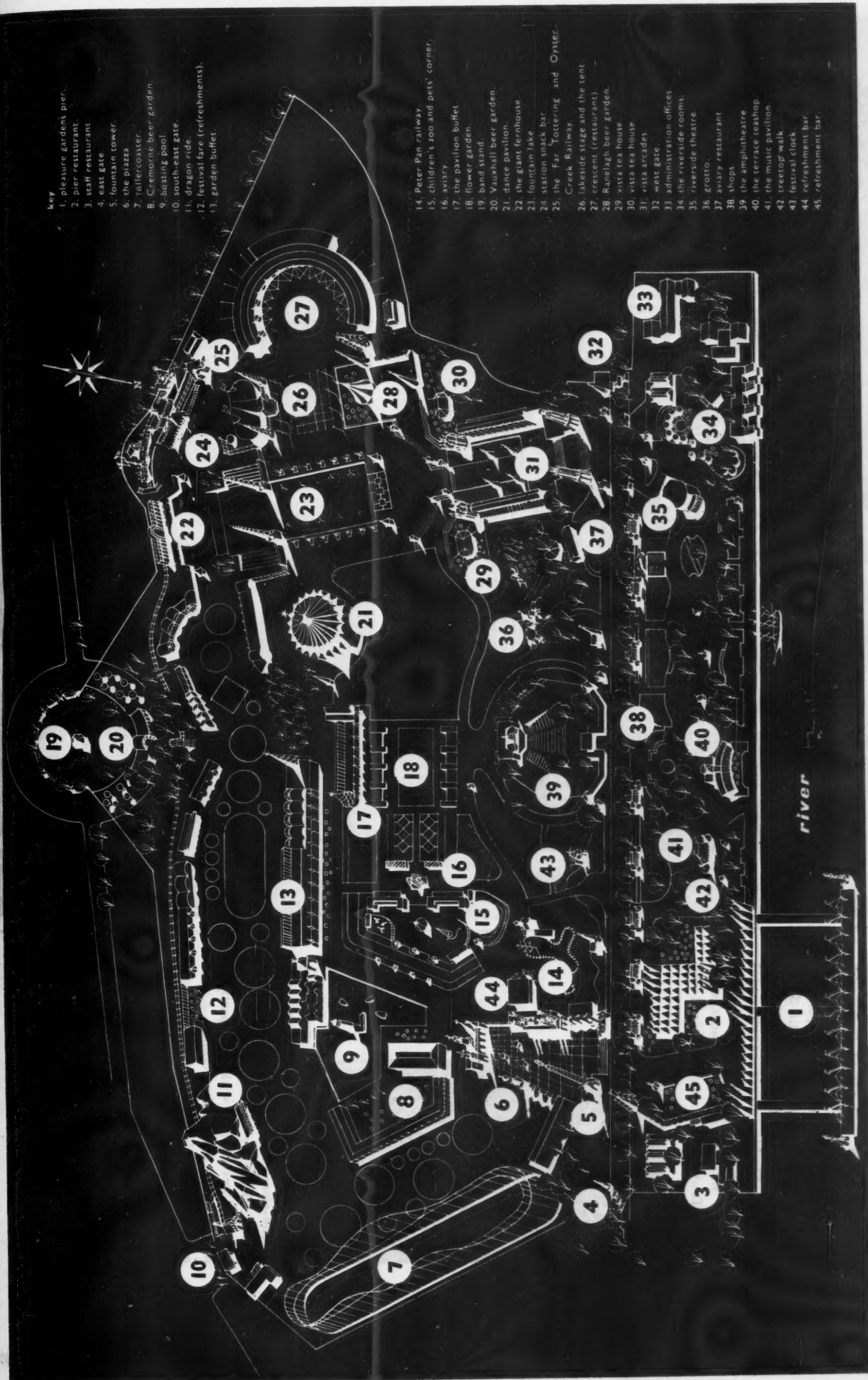
ARCHITECTURAL PREVIEW

# FESTIVAL PLEASURE GARDENS BATTERSEA PARK









key

1. pleasure gardens pier.
2. pier restaurant.
3. staff restaurant.
4. east gate.
5. fountain tower.
6. the piazza.
7. rollercoaster.
8. Cremorne beer garden.
9. boating pool.
10. south-east gate.
11. dragon ride.
12. festival fare (refreshments).
13. garden buffet.

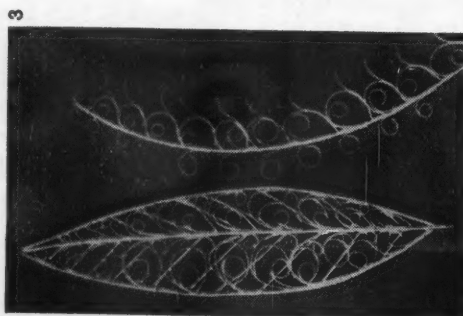
14. Peter Pan railway.
15. children's zoo and pet's corner.
16. aviary.
17. the pavilion buffet.
18. flower garden.
19. band stand.
20. Vauxhall beer garden.
21. dance pavilion.
22. the giant fernhouse.
23. fountain lake.
24. station snack bar.
25. the Far Tottering and Oyster-Creek Railway.

26. lakeside stage and the tent.
27. crescent (restaurant).
28. Ravelagh beer garden.
29. vista tea house.
30. vista tea house.
31. vista arcade.
32. west gate.
33. administration offices.
34. the riverside rooms.
35. riverside theatre.
36. grotto.
37. aviary restaurant.
38. shops.
39. the amphitheatre.
40. the terrace restaurant.
41. the music pavilion.
42. freetop walk.
43. festival clock.
44. refreshment bar.
45. refreshment bar.

As a complement to the Festival of Britain South Bank Exhibition the pleasure gardens in Battersea Park aim to 'provide facilities for entertainment, refreshment and relaxation.' Approached by the river as well as by road the gardens occupy some thirty-seven acres and contain a theatre, which will be permanent, in addition to temporary pavilions and pagodas, shops and

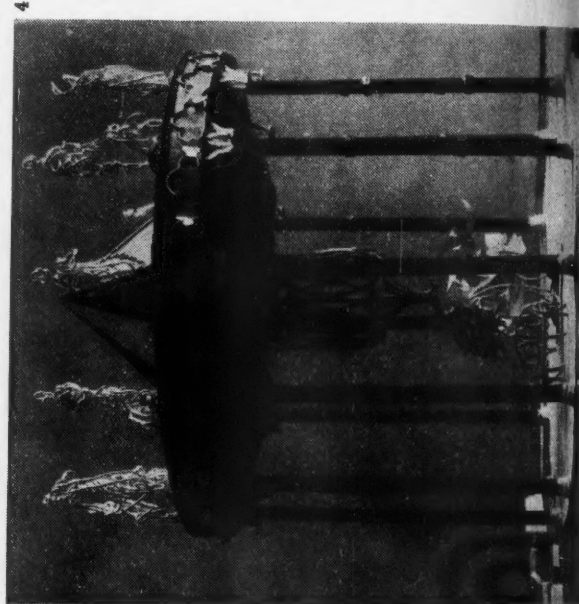
restaurants, flower-gardens and terraces, fountains and artificial lakes, a grotto, a zoo, a miniature railway and fun-fair entertainments of all kinds. At night the gardens will be illuminated and London will possess for a short while an evening entertainment reminiscent of the vanished pleasure gardens of Cremorne and Vauxhall whose names are commemorated at Battersea Park.

**Main Vista** The entrance of the Main Vista, 2, has a welded tube frame with applied decorations of painted wrought iron and steel rods. The four main supports are bright red with a white spiral motif, 5; the arches and dome are light yellow, blue-grey and white. Flanking towers are constructed of tubular scaffolding and fibrous plaster cladding with tracery and pinnacles of wicker. Towers are in two shades of red with

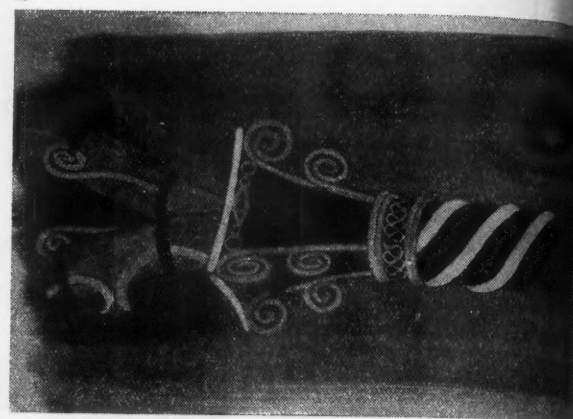


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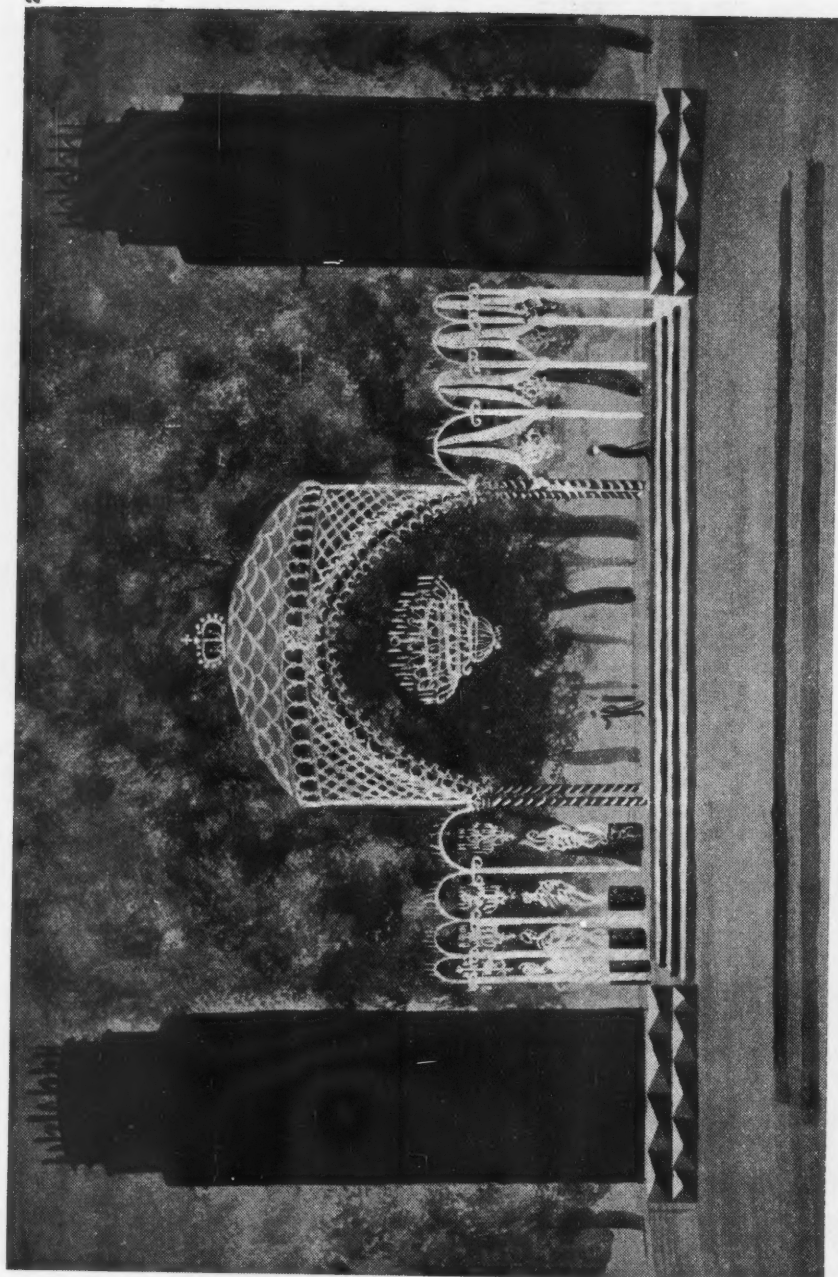
wicker and mouldings in light yellow. 3 is a detail from the giant decoration which forms an end-piece to the main vista and a background for the firework displays. This work is carried out partly in wicker and partly in painted sheet metal. The rotunda, 4, has a steel frame with painted wicker detailing. Statues surmounting the rotunda are of wicker and are designed by Ursula Earle. Designers: John Piper and Osbert Lancaster. Architects: Harrison and Seel. Structural Engineer: C. V. Blumenfeld.



4

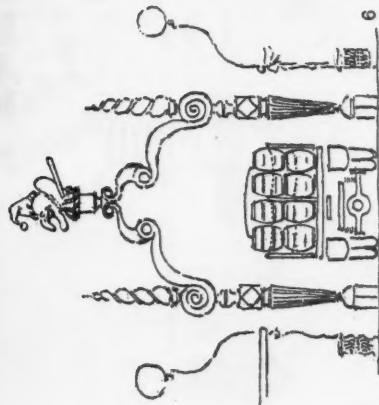


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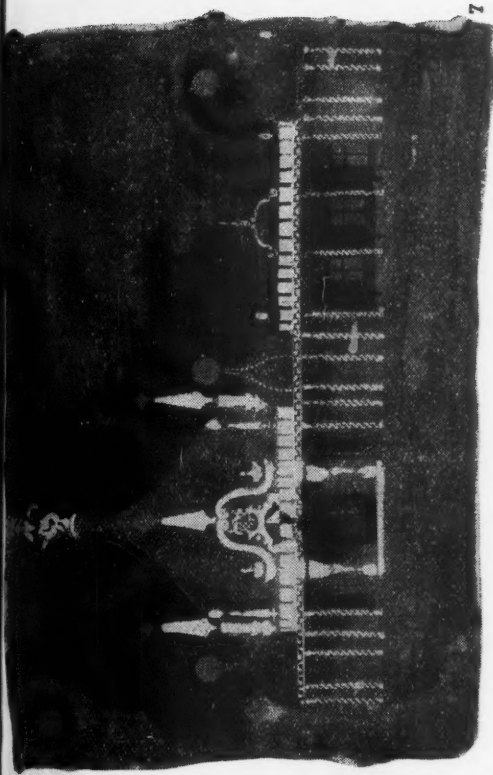


2

*The Pavilion Buffet* (17 on the plan, page 231) This structure, 7, is wooden framed with timber studding and timber roof-trusses. The roof and walls are of expanded lath and plaster work painted with bituminastic paint finished in grey-green. Fibrous plaster decorations are picked out in cream and gold. The drawing, 6, is a projected gateway between the Flower Garden and the fun fair proper. Architects: Harrison and Seel. Structural Engineer: C. V. Blumenfeld.

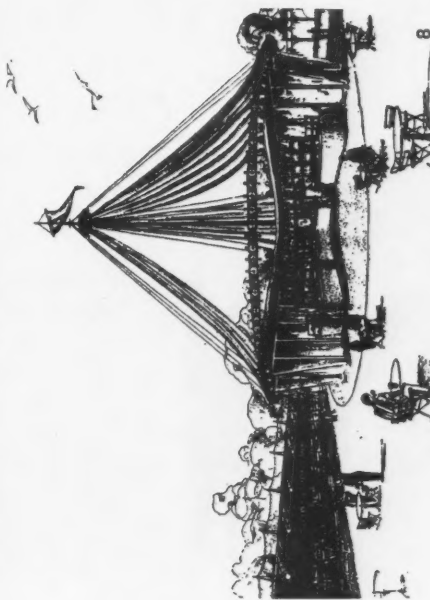


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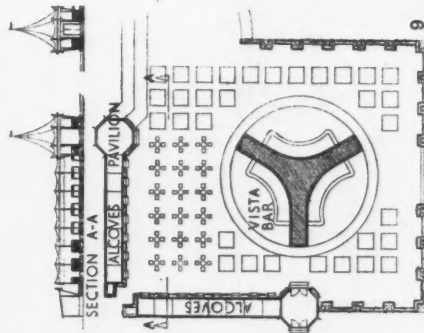


7

*Ranelagh Beer Garden* (28 on the plan) The walls of the three-legged bar structure are formed of prismatic glass sheets illuminated by cold cathode tubes. This bar area can be covered in case of rain by a tented roof supported on a centre pole and on an eaves ring which is connected to the ends of the main bar structure. The eaves ring is of wrought iron studded with electric lamps. The guy-ropes will be decorated with fairy lamps. Architect: Bernard Engle.

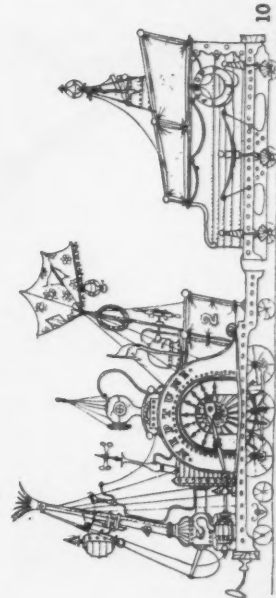


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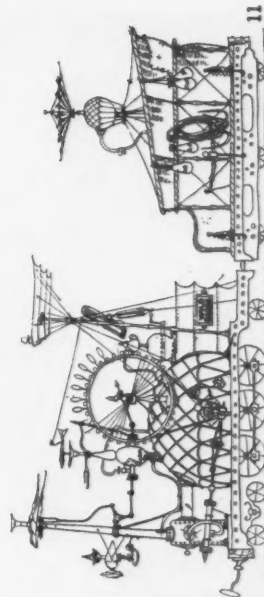


9

*The Far Tottering and Oyster Creek Railway* (25 on the plan) Three locomotives are in service on this 500-yard line, Nellie, Neptune, 10, and Wild Goose, 11, all in the style of Rowland Emmett's well-known Punch drawings. Neptune is a nautical engine for fishermen and smugglers with a brass-bound mahogany-slatted boiler and with rum barrel cylinders connected to paddle wheels. Wild Goose has a funnel with flapping wings, a pink, green and yellow balloon body retained by a white rope net and a flywheel with tablespoons bolted on as turbine blades. Designer: Rowland Emmett. Architects: Harrison and Seel.

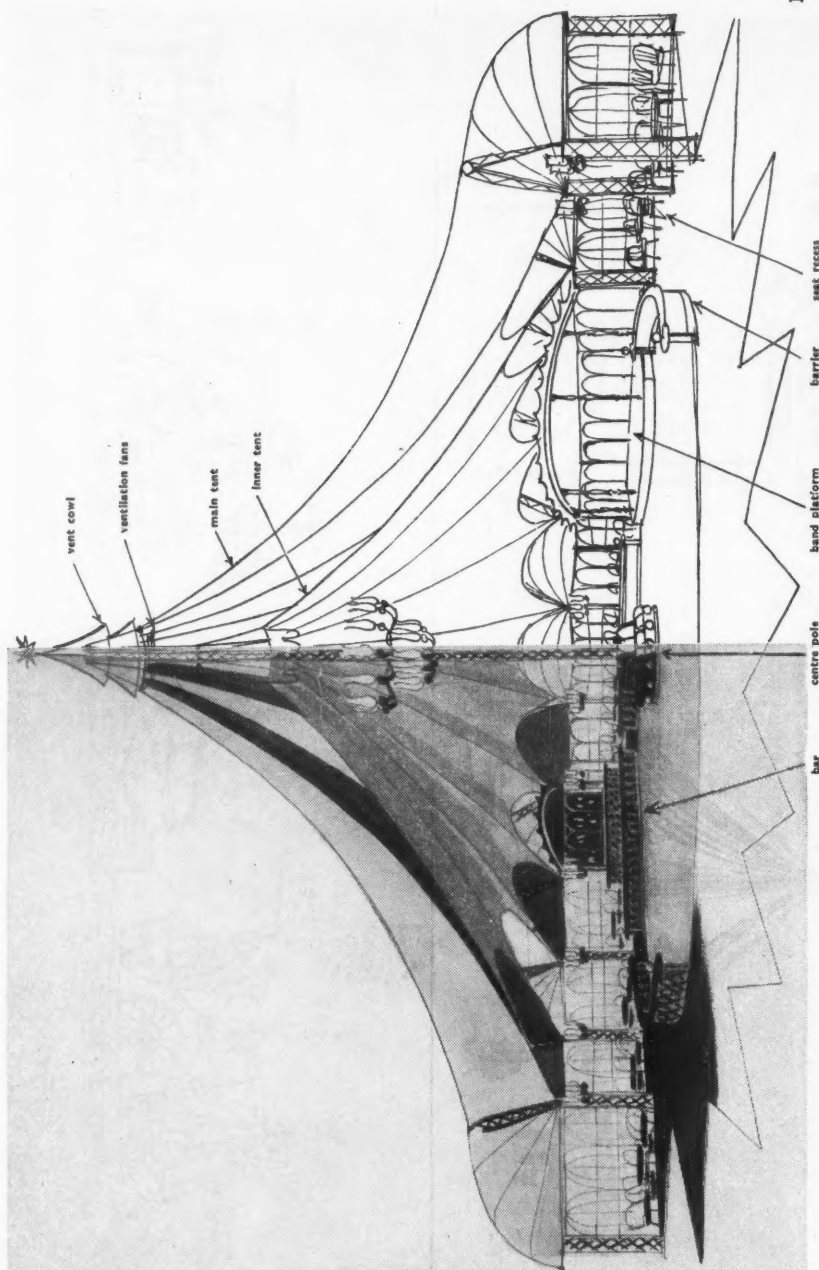


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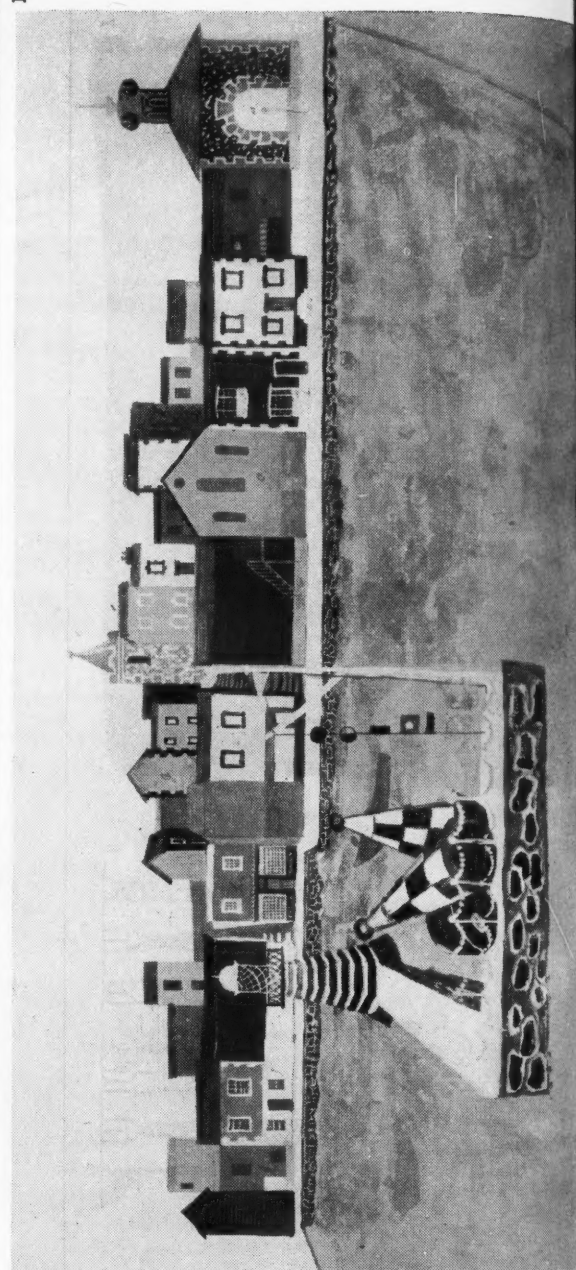
*Dance Pavilion* (21 on the plan) This is a large tent of brown and yellow striped canvas with an inner tent inside. It is supported on a steel pole with vertical lattice girder stays set in concrete instead of guy-ropes and with metal windows. Four main guys support the centre pole. The dance floor is a standard floating wooden floor. Winches for raising the tent are concealed by the seats at the bottom of the centre pole. The bar is constructed of wood painted to match the barriers between the dance floor and the carpeted promenade, with a plastic counter top and painted plasterboard canopy. Designer: James Gardiner. Architect: Roger K. Pullen. Structural Engineers: S. H. and D. E. White.



12

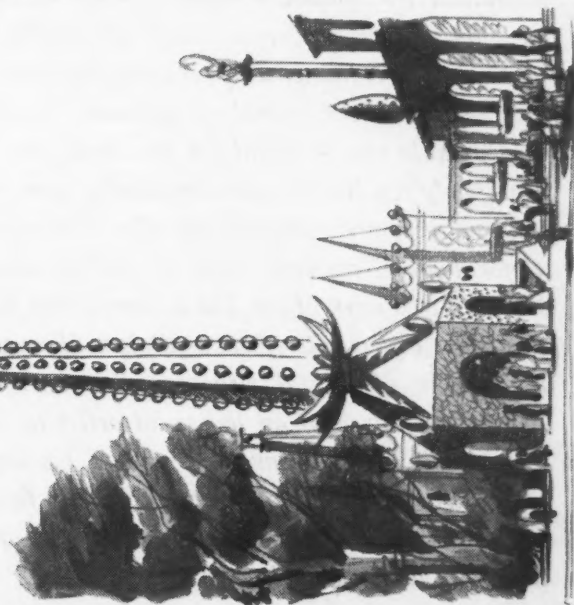
*Boating Pool* (9 on the plan) This is an artificial pool of reinforced concrete and will have dodgem boats and a lighthouse. On its western side is a reinforced concrete wall which serves as a screen behind which balloons are sent up. This wall is decorated with the mural illustrated here, painted by Fred Millett. Designers: James Gardiner and Fred Millett. Architect: Roger K. Pullen.

13



*Treetop Walk* (42 on the plan) This walk amongst tree branches is approached by a spiral staircase and consists of planking slung from the trees by steel hawsers. Features in the trees, including a kiosk, are made some of fibrous plaster and some of plastic spun on wire frames. The three features illustrated here, *Weather House*, 14, *Tree Village*, 15, and *Dragon*, 16, are designed by Bruce Angrave. Designer: James Gardiner. Structural Engineer: Lawrence Kenchington.

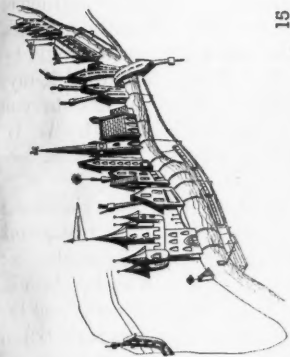
*Fountain Tower* (5 on the plan) This vertical feature has a light steel frame set on a base of reinforced concrete arches with painted wooden facings. The upper part of the feature consists of golden-coloured aluminium balls attached to endless belts giving, in sunlight, and when lit up at night, an impression of cascading water. Designer: James Gardiner. Architect: Roger K. Pullen. Structural Engineer: Lawrence Kenchington.



17



14

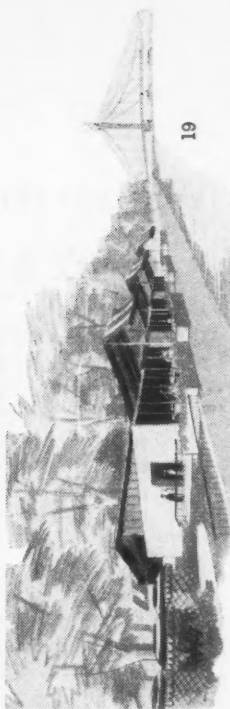


15



16

*The Riverside Rooms* (34 on the plan) This is a prefabricated building of timber and hardboard. Canvas canopies are supported on timber trusses. Designer: James Gardiner. Architect: Basil Duckett. Structural Engineer: Lawrence Kenchington.

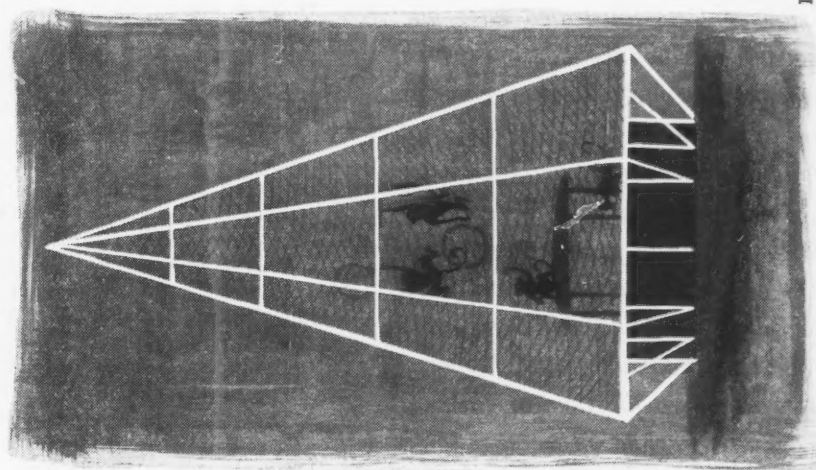


19

*Aviary Restaurant* (37 on the plan) Designed round the largest tree in the Gardens, with a budgerigar aviary at its base, this tea-garden is of plastered breeze blocks with a patent wood and copper roof. Architect: Hugh Casson.



20



18

*Children's Zoo and Pets Corner* (15 on the plan) The monkeys' cage illustrated here is constructed of tubular steel set on a concrete base. The main frame is painted white, the netting black and the base brown. Designer: Fred Millett. Architects: Harrison and Seel.

*That art and science have shown a tendency during the past quarter-century to draw together more closely than at any previous time in history is a truism which can be illustrated in many different ways. In architecture, we have a new dependence on the calculations of science on the structural plan; on the aesthetic, the new interest of Le Corbusier and others in the mathematics of proportion. In sculpture, we have the resemblance of certain of the early works of Henry Moore, for example, to models made to demonstrate mathematical conceptions. In painting, we have similar manifestations—while on the other side mathematicians sometimes go out of their way to make out that the pleasure to be got from a mathematical problem neatly solved is similar to that which results from the contemplation of a work of art. On this and the following pages the REVIEW presents another example of this drawing together of art and science, this time in the realm of applied pattern. For all the patterns on the various objects illustrated have one thing in common: they are based on the diagrams which crystallographers employ to convey their discoveries about the structure of crystals. (The principles of these are explained in the accompanying article by Dr. Helen Megaw, Assistant Director of Research in Crystallography, Girton College, Cambridge.) The programme within which the designs were produced was initiated by the Council of Industrial Design and participated in by twenty-six leading British manufacturers; the most complete collection of them is to be seen in the Regatta Restaurant on the South Bank. Whatever may be thought of the designs individually, the whole venture is bound to raise the question whether the crystal diagrams really provide that new subject matter which is sometimes held to be a precondition of the revival of ornament. In so far as they provide raw material for the artist, the answer is probably yes. But the operative word is 'raw,' and the final answer surely depends on what is done with it. Unfortunately, perhaps, there is still no convenient short cut to a work of art. The designs on the following two pages reflect, therefore, as designs always do, not the beauty of crystal structure diagrams, but the success or failure of an industrial artist to come to terms with his problem; they reflect his logic, his sensibility, his power of imagination, his feeling for line, colour, pattern and, where the given material allows it, for form and texture.*

## THE INVESTIGATION OF

## CRYSTAL STRUCTURE

Most people have at one time or another noticed and admired the frost-flowers on the window-pane. It is easy to understand that such patterns owe their beauty to the underlying regularity of the crystal structure. All crystalline substances have such an underlying regularity of constitution, though it does not always have the chance to show in external form. Large and perfectly formed crystals are rare because they need very uniform conditions for their growth; such crystals are often valuable as gem-stones. But small crystals have the same regularity of internal pattern, and they are of very common occurrence; every stone, every piece of metal, is an interlocking mass of small crystals of one or more substances, and nearly every chemical compound can, under the right conditions, be obtained as a crystalline solid.

The idea that a crystal is built up by a regular repetition of identical units was guessed at by the older crystallographers, notably by Robert Hooke (Newton's contemporary), and by Haüy in the eighteenth century. But it was not until X-rays were applied as a tool to the study of crystals, first by von Laue in Germany in 1912, and then in England by W. H. Bragg and W. L. Bragg, that these guesses could be confirmed in outline and explored in detail.

It is easiest to understand the method if we can visualize a model to illustrate the structure. Imagine a wire framework outlining a parallelepiped—it may be oblique-angled, or rectangular like a brick, or equal-sided like a cube. Into it, at certain specified positions, are fixed balls to represent the atoms. This is the unit of pattern, known as the unit cell. A very large number of such units are now constructed, all identical, and stacked together into a three-dimensional pile. If we now forget about the wires, which represent only construction lines, the result is a model of the crystal structure.

It is clear from this model that, if the structure is unknown, we have only to discover the size and shape of the unit cell, and the way the atoms are arranged within one such cell, to know the whole. For this no microscope is any use, as the size of the unit cell is far too small.

Investigation of the structure is made possible because of the regular repetition of the unit. A regularly spaced set of obstacles, with gaps between, will diffract a train of waves falling on them, provided that the wave-length and the spacing are of the same order of magnitude; that is, they will send out new wave-trains in certain calculable directions, depending on spacing and wave-length. The effect can sometimes be seen with sea-waves meeting a line of posts. Another example arises when a distant street-lamp is viewed through an umbrella; the pattern of threads in the material spreads out the light into a related (but not identical) pattern of rays, which appears to the viewer as a pattern of bright spots. With crystals, the spacing between repetitions is very much smaller; for example, a grain of common salt about the size of a full stop contains a million unit cells along its diameter. This is just about the right size to diffract X-rays, which have a very much shorter wave-length than visible light. From the diffraction pattern of the X-rays we have to deduce the pattern of the atoms diffracting them.

Unfortunately there is no known method to recombine the diffracted X-rays in the same way that a microscope recombines diffracted light rays to make an image of the object

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## Designs inspired by crystal structure diagrams

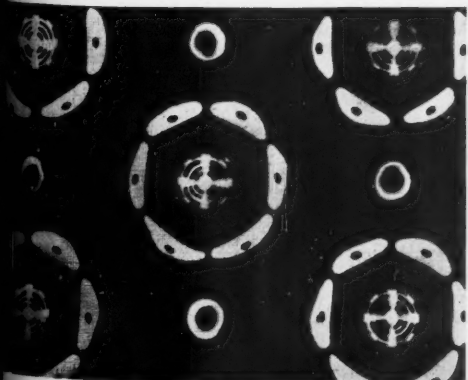
Below and on the next page are a selection of designs for various products inspired by the investigations of the crystallographer. The scientist's diagrams are indicated by letters and the designs for textiles, china, plastics and so forth, which are based upon them, by numbers.



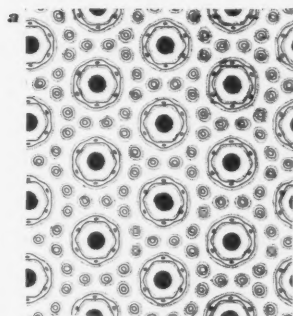
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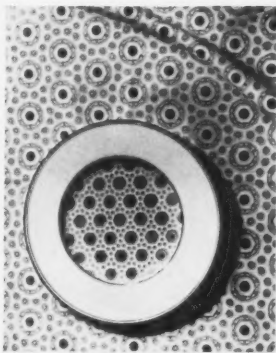
4



Although some of the examples on this and the next page may mark an advance on the previous design standards of the companies concerned, they surely fall a good deal short of what we have come to expect from contemporary industrial design at its best. In one or two the designers seem to have employed the crystallographer's patterns with insufficient thought as to their suitability for the product in question, applying them little changed with an effect the only virtue of which

is repetition. There is much to be said for evolving a vocabulary of pattern so long as it is used as a tool, and not as an alternative to creative effort. If the examples here are considered mostly as experiments, they may well mark the first approach to a vocabulary and as such are to be welcomed. It is significant nevertheless that the most successful are those which the imagination of the designer has transformed until they are the furthest removed from their parent diagram. The six products shown in 1-5

are all based on the Haemoglobin diagram **a**. **1**, dress silk designed by Arnold Lever; background in turquoise and pink, design in fuchsia, lemon and black. **2**, curtain material for the Festival of Britain science exhibition: white design on a mid-blue background. **3**, leather cloth designed by Charles Garnier; dark grey background with design in black, red and white. **4**, tie designed by B. Rowland with red background and design in white, straw and black. **5**, plate in blue, green and maroon on white designed by Peter Wall, placed on a piece of printed cotton.



5

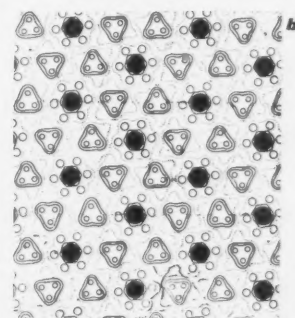


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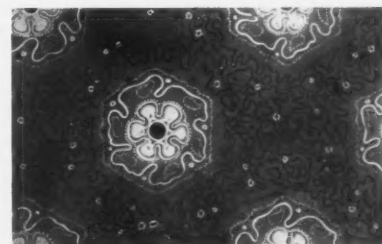
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**6 & 7**, two wallpapers by Robert A. Sevant, for the Festival science exhibition, based on a diagram of the crystal structure of Insulin



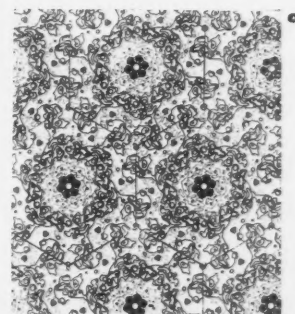
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**b, 6** has a design in white, canary yellow and black on a chocolate brown ground, and **7**, the same colours in the design on a blue-grey

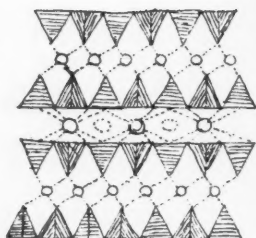
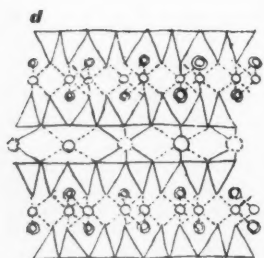


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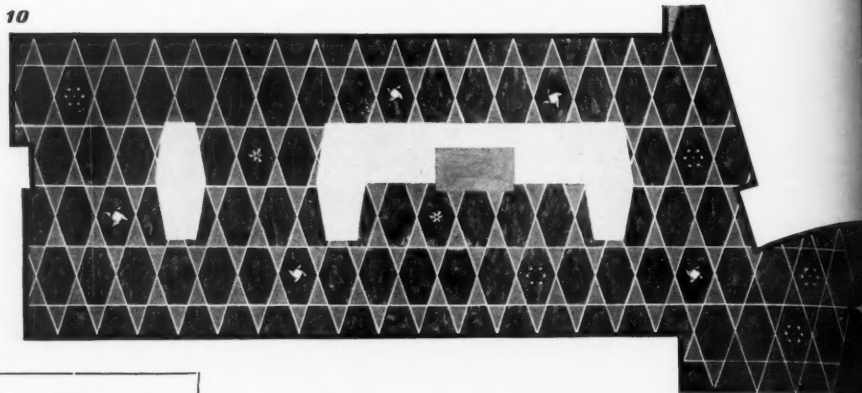
ground. **8**, a wallpaper designed by W. J. Odell also based on Insulin but this time on another aspect of it **c**. The design is in grey-purple, pale lemon and black on a dark green ground. It will be seen in the Regatta restaurant on the South Bank.



c



10



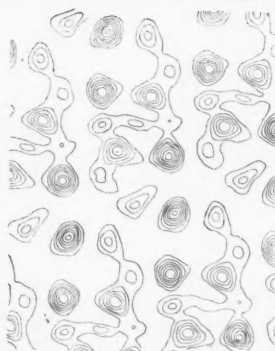
**9**, a wall bracket designed by R. J. Reynolds (the shades by H. Webster) and based on a

diagram of the crystal structure of Beryl **e**. The shade is beige and the wall panel dark blue.

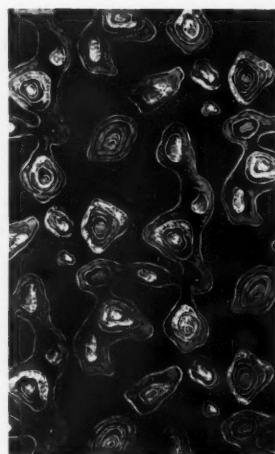


**10**, rubber flooring for the Festival science exhibition based on crystal structure diagrams of Mica **d**. The colours are

yellow, red, green, cream, French grey, fawn, light blue, white, black, mid-grey and dark rose.

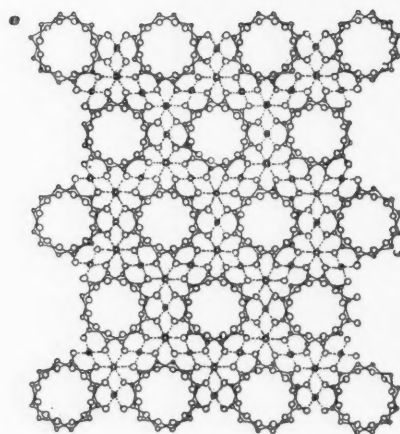


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12

**11**, a plastic board in black and white on a blue background. **12**, a wallpaper designed by W. J. Odell in white and lime yellow on a dark green ground. Both patterns are based on a crystal structure diagram of Afwillite **f**, which is also reproduced on the cover.





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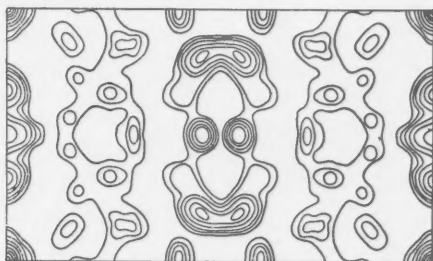
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being examined. It is necessary to fall back on calculation, which is much more tedious. It is always possible to calculate directly the size of the unit cell, but only in exceptional cases its contents. However, the reverse process is always possible: if we guess the pattern of the crystal, we can calculate the corresponding pattern of diffracted X-rays, and hence check whether our guess is correct. This is the part of the work where insight is needed. A good guess may take one straight to the answer, a bad guess waste a lot of time before it is disproved.

Experimentally, a narrow beam of X-rays of known wavelength is allowed to fall on a crystal. Very small crystals, say 1/10 mm. across, are quite big enough for the purpose. A photographic film, wrapped in black paper (which is penetrable to X-rays but not to light) is placed where the diffracted rays fall on it; the developed film records the rays as a pattern of black spots. From their positions the size and shape of the unit cell can be calculated. Their intensities contain the evidence for the arrangement of the cell contents, but as we have seen cannot be interpreted directly. They are, however, used as they stand to construct a map of interatomic distances.

A trial structure has now to be constructed, and there are several different lines of evidence to give guidance in doing so. Firstly, the atoms must be placed so that the interatomic

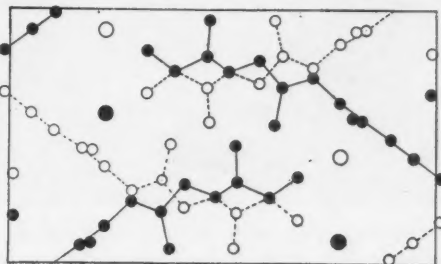
The three diagrams on this page are projections of the structure of diglycyl glycine ethyl ester hydrobromide, an organic substance. Right, a contour map of interatomic distances.



distances agree with those we know from our map. Secondly, the placing of the atoms must satisfy symmetry requirements. A unit cell shows symmetry if it can be cut into two or more parts, which, when suitably placed, are identical with, or mirror images of, each other. Repetition of the unit cell does not by itself constitute symmetry, but most structures possess some form of symmetry as well as repetition. It can be shown mathematically that there are 230 different possible combinations of symmetry elements for three-dimensional structures. Each symmetry set has its characteristic effect on the pattern of diffracted rays, and hence the symmetry of the atomic arrangement is known.

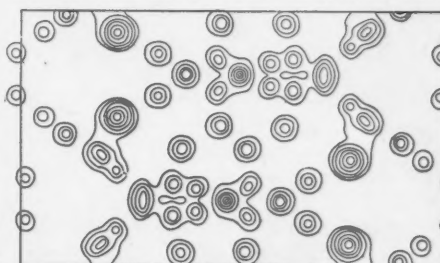
Thirdly, the interatomic distances and the way the atoms are packed together must be in accordance with our existing body of knowledge about these, built up from earlier work on simple substances determined directly from the X-ray data. We know the sizes of atoms, or rather their distances of closest approach to one another when held together by attractive forces of different kinds. We know the common groupings, for example that a silicon atom is surrounded by four oxygens at the corners of a tetrahedron, and that these tetrahedra may share corners to make more complex groups. We often know from the chemists how the atoms in an

Right, diagram showing positions of atomic centres and bonds between atoms. (The black and open circles represent atoms at different levels in the structure.)



organic molecule are linked together (though not how they are placed in space). Any structure which is to be convincing must comply with these general principles, or show very good reason for any departures from them. Sometimes the dimensions of the unit cell mean that there is only one possible way of packing the atoms into it; more commonly, they impose restrictions on the possibilities.

If a trial structure satisfies all the requirements of chemistry and geometry, we test it by means of the diffraction data, and then use these to find the atomic positions more exactly. Since the diffraction pattern depends on the detailed distribution of matter which can scatter X-rays, it can yield, with the help of the appropriate mathematical technique, a map of the density distribution of the scattering matter, below. We have thought of this as consisting of atoms; actually it is the electron shells within the atoms. Thus an electron-density map, calculated from X-ray intensities, shows the atoms as little round hills, with minor ridges which have



Left, contour map of the electron distribution constituting the atoms. The largest peaks represent the heavy bromine atoms (cf. the large circles in the second diagram). The distances between these give rise to the largest peaks in the first diagram. All three show one unit cell of the substance. The whole structure is built up by placing such units side by side and repeating them indefinitely.

to be examined carefully to decide whether they are bond-forming electrons or the result of pushing the calculation further than the experimental data justify. Here we are at the frontier of knowledge, and this type of map, when based on good experimental work, represents the fullest available information about the structure of the crystals concerned.

Though the methods of crystal structure determination are thus a part of physics and mathematics, its practical applications are more often in the field of chemistry. A practical chemist interested in a particular substance wants to know the arrangement of its atoms and the bonds between them. This knowledge may help him to synthesize the substance, or to use it as an intermediate step in the synthesis of something else; or again, it can throw light on the mechanism of particular chemical changes, and thereby open up improved technological methods. Much of chemistry is directed towards finding atomic arrangements; crystallography takes the search a stage further. Where chemical methods are unsuccessful, crystallography may discover a key, or even the complete answer. Where chemical methods already provide information, crystallography uses it as a starting-point, and (in favourable cases) builds up fuller and more exact knowledge. Some substances, however, provide no good clues for the crystallographer, or would involve him in prohibitively lengthy calculations; for this reason, he must pick and choose his material from the wide range of compounds the chemist has to offer.

Though the crystallographer thus co-operates with the chemist, it is only occasionally that his real interest is in the immediate 'usefulness' of his results. He wants rather to study the general laws of atomic arrangement and of interatomic forces, and their application in particular cases. In this way, he is helping to build up a coherent body of knowledge in which the crystalline solid and all its properties, chemical as well as physical, are described in terms of the fundamental laws of physics. At the same time, he is adding to our knowledge of these fundamental laws. The development of such a theoretical background is one of the prerequisites for further achievements in the practical control of materials. Crystallography has given us a new tool for the work; we are still only at the beginning of our discovery of its usefulness.



1



2

**Brunel and Paddington** 1, the main shed of Paddington station to-day, and 2, in 1861, when Frith painted his Railway Station. The fine lamps have gone and in their place is a clutter of austerity lights, loudspeakers and platform numbers along with the wires and bars that support them. But it is still possible to enjoy the huge sweep of the five-centred arches, and the exciting diagonal views through the transepts. Such stations as this, 'the real cathedrals of the nineteenth century,' are now State property, and it is gratifying to learn from the Report on Relics and Records, reviewed on page 263, that their value is appreciated by those who are responsible for them,

*The great railway stations are the real cathedrals of the nineteenth century—as that century in its saner moments could itself see. Yet they have only recently been accorded the serious attention of architectural historians and critics. Cubitt's King's Cross, it is true, has for some years past got a conventional mention in most accounts of nineteenth-century architecture in England. But the equal though different merits of Paddington have hitherto been practically ignored. Here Henry-Russell Hitchcock describes and discusses them, together with the engineer-architect collaboration between Isambard Kingdom Brunel and Matthew Digby Wyatt of which they are the still enduring result.*

## BRUNEL AND PADDINGTON

A SURPRISINGLY LARGE number of Victorian railway stations remain in use in Britain. Many travellers passing through them today, concerned with present convenience, doubtless regret their survival. But their continued existence is most gratifying to the architectural historian—at least when he is not travelling in Britain. Suggestions made by myself and others to the architects and public relations officers of several railways, before nationalization, to the effect that the preservation, repair and maintenance of these major nineteenth century monuments constituted a cultural responsibility were met somewhat as eighteenth century deans must have responded to early Gothick enthusiasts. For stations are of course being preserved today not as a duty but *faute de mieux*. A serious rebuilding campaign now appears more distant than ever. Doubtless minor emendations will from time to time be made, in the way Decorated choirs, Perpendicular clerestories and Georgian furnishings were added to Norman cathedrals; but their replacement is certainly not imminent.

In the meantime an awareness of the remarkable intrinsic interest of these structures, the real cathedrals of the nineteenth century,<sup>1</sup> can ease the discomfort of using them. Some, indeed, stepping from their train at King's Cross, Paddington, or even Victoria, across the narrow arrival platform directly into a taxicab, may in any case remember the 500 to 1,500 feet which must be traversed to reach public vehicles amid the twentieth century splendours of New York's chief terminals. Irony aside, the great British Victorian stations, carrying loads of traffic

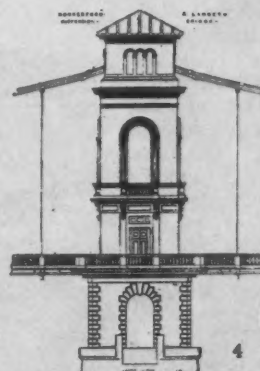
infinitely heavier than those for which they were designed, demonstrate by the fact that they are not yet really obsolete the considerable architectural abilities of the teams of engineers and architects who built them.<sup>2</sup>

That these men had prescience, I doubt. As with Greek temples or mediæval churches, however, buildings which once fulfilled their functions with real humanistic success are assured of an almost indefinite after-life. There are various other Victorian buildings that have claims to distinction of one sort or another, but the great railway stations have the surest, the broadest and, even into the foreseeable future, the most enduring.

### Brunel before Paddington II<sup>3</sup>

The brilliant and opinionated engineer of the Great Western Railway, Isambard Kingdom Brunel, a man who scorned to take the advice of his compeers, had won the competition for the bridge at Clifton across the deep gorge, down-river from Bristol, in 1829. His project was for a bridge on the chain-suspension principle supported by piers in the form of enormous Egyptian pylons. As begun in 1837, these piers are indeed crowned by Egyptian cornices; but they have quite irregularly battered sides and the arches that cut through them follow a steep catenary curve unknown to the Egyptians. When the bridge was finally finished in 1864, after many vicissitudes, by using the iron materials of another Brunel bridge that had crossed the Thames from Hungerford Market to Lambeth,<sup>4</sup> Hawkshaw and

Barlow, the engineers on the job, did not feel obliged to go to the expense of covering the random Pennant stone masonry of the pylons with the metal plates stamped with hieroglyphics which Brunel had originally envisaged. In a way this is a pity. For an Egyptian suspension bridge one must go to Leningrad where the example is all of iron, but on a small scale and without the superb romantic context of the precipitous Clifton gorge.



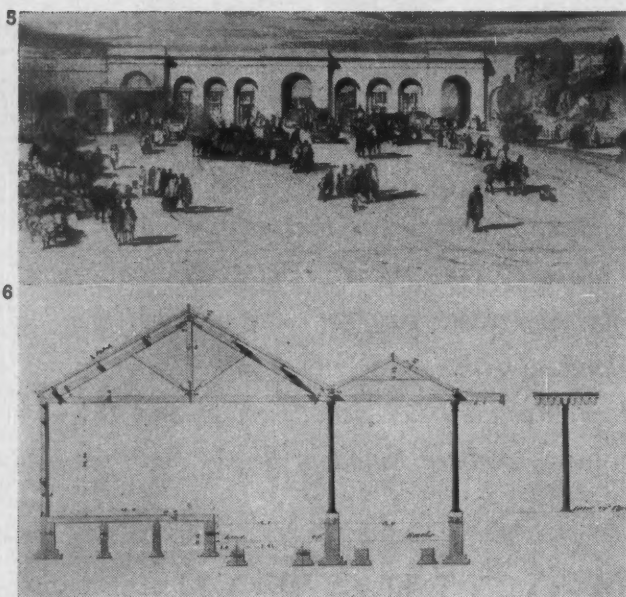
3, Clifton Suspension Bridge, 1837-64, by I. K. Brunel. 4, Hungerford Suspension Bridge, by Brunel and Bunning, which was opened in 1845.

<sup>1</sup> This claim for them was made at least as early as 1875 (*The Building News*, XXIX, p. 133). I owe the reference to C. L. V. Meeks of Yale University. Professor Meeks's Harvard doctoral dissertation, as yet unpublished, *The Architectural Development of the American Railroad Station, 1948*, is, I believe, the most complete treatise on the early history of stations in Europe, as well as in America. From him come many of the facts in this article.

<sup>2</sup> A particular interest of railway station design is that the best results were generally obtained by collaboration between engineers and architects—as was also true of several fine Victorian bridges.

<sup>3</sup> With successive stations of the same name it is convenient to distinguish them by Roman numerals.

<sup>4</sup> The simple Italianate piers of the Hungerford Bridge were designed by J. B. Bunning, the City architect, and without being particularly distinguished or obviously appropriate they are at least less wildly romantic than what Brunel proposed at Clifton.



5, the first Paddington Station, 1838, waiting-rooms and ticket offices were housed below a viaduct that carried the Bishop's road. 6, original drawings of the sheds of the first Paddington.

Because of its setting, and despite the succession of hands required to bring it to completion after more than thirty years, the Clifton span properly rates as one of the great nineteenth century achievements in bridge-building. Yet it can hardly be considered as coherent a design as the Britannia Tubular Bridge, on which the able railway station architect Francis Thompson collaborated *en égal* with the engineer Robert Stephenson.

Brunel did not attempt to use Egyptian forms for railway stations.<sup>5</sup> Indeed at Paddington I he—or the Great Western directors—were content for fifteen years with what was practically no station at all. Waiting-rooms and ticket offices were placed under the arched viaduct that carried the Bishop's Road, north of the site chosen for the eventual terminus. That was certainly an extreme instance of functionalism of some sort! Even the sheds were modest in scale (one 80-foot span and outside it another of 12, with a 5-foot cantilever) and also modest in their design. The slender iron columns which supported the wooden trusses had no decoration on their bell capitals, but there was an ornamental wooden pelmet at the edge of the cantilever, in the tradition of the Regency awning-verandah. This was one of the first and the simplest examples of a very characteristic and persistent form of railway ornament for small wayside stations.

The large Great Western

<sup>5</sup> W. J. Short had done so in a station projected for Kennington Common in 1836. J. S. Mulvany's Broadstone Terminus in Dublin, like the Britannia Bridge, was sometimes loosely described as Egyptian by contemporaries.

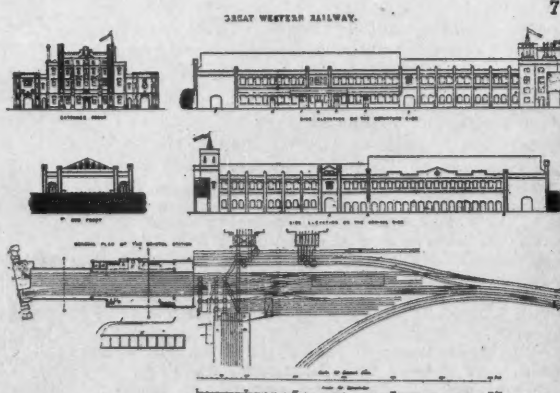
stations at Reading and Swindon, built respectively in 1839-40 and 1841-42, were the duller of Engineers' Italian, without any of the romantic 'Villa' touches of which the leading railway station architects, Francis Thompson and Lewis Cubitt, were so fond. The small stations along the eastern half of the line were even simpler. Their admirable cantilevered marquees are, however, attractively edged with scalloped wooden pelmets.

At the other end of the line, at Bristol and Bath and also at the smaller way-stations between, Brunel felt once more 'the call of the romantic West Country'—as the railway might put it in present-day advertising.

This time he turned not to the Egyptian, but to the Tudor. The irrelevance of the turrets and battlements on the Bristol station infuriated Pugin almost more than the Doric columns of Philip Hardwick's Euston 'arch.' Yet Temple Mead I in Bristol, still effectively extant though not in current use today, is a most remarkable terminal station in plan and construction. It was built in 1839-40 and the similar but smaller through-station at Bath in 1840-41. At both stations the railway came in on a high viaduct so that it was possible to work with two levels, as Tite was doing at the otherwise rather undistinguished Blackwall and Minories termini of the short London and Blackwall dock railway.<sup>6</sup>

The Temple Mead I train-shed has a fine wooden hammerbeam roof. This rests on a Tudor arcade with iron columns which are set at the inner edge of each of

<sup>6</sup> Some French engineer, perhaps Eugène Flachet, was doing this rather more dextrously at the Gare de Versailles (later Gare Montparnasse) in Paris also in 1840.



7, plan and elevations of the first Temple Mead Station at Bristol. 8, interior of the first Temple Mead shed, the span of hammerbeam roof exceeded by four feet that of Westminster Hall, the greatest feat of mediæval carpentry.

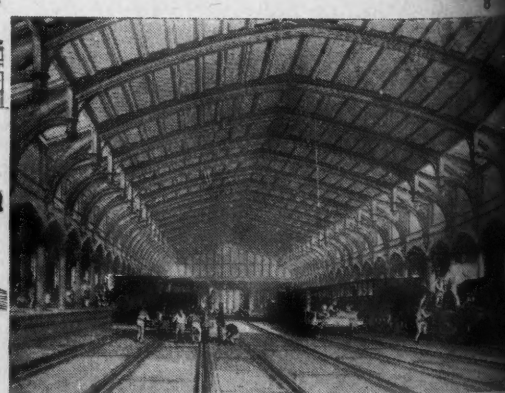
the two platforms. It is abutted over the platforms from the buttressed masonry side walls. The carpentry of this shed not only puts to shame Pugin's own matchstick timber roofs of the period; it actually has a span exceeding by 4 feet that of the greatest feat of mediæval carpentry, the hammerbeam roof of Westminster Hall (72 feet to its 68 feet). That was reviving the Gothic in the spirit of the Elmes-Rawlinson vault of St. George's Hall, likewise destined to exceed its ancient prototype, but as yet only a dream!

The lighting from above is cleverly handled; it comes through the roof at the edges in a most un-mediæval way, but just where it is most needed. The platforms are side-lit by windows between the buttresses of the walls. From the platforms on either side there are several flights of stairs. Those on the departure side come up from the waiting-rooms and ticket offices which face one vehicle court; those on the arrival side lead down to a sort of cloister along another vehicle court.

A subsidiary shed<sup>7</sup> without platforms extends over the tracks well beyond the down-end of the main shed for shunting. This shed connects with a four-storey front block in which were the chief offices of the company. The office block is flanked by gateways leading into the two vehicle courts.

Except for the lack of cross-communication between the two sides, such as Locke and Tite had already provided at Vauxhall (now Nine Elms Goods Station), this is a remarkably mature station. It is even superior in conception to Thompson's Derby Trijunct of 1838-39, though markedly inferior both in the appropriateness and in the integrity of its design. For the Tudor embellishments, despite their stylistic relevance to the hammerbeam roof of the shed, give it the air of a 'mere caricature,' as Pugin justly wrote in his *Apology for the Revival* (1843). 'Mock-castellated work . . . shields without bearings, ugly mouldings, no-meaning projections and all sorts of unaccountable breaks . . . make up a design at once costly and offensive and full of pretention': that was the Christian Functionalist's stern verdict on a station which was certainly

<sup>7</sup> In addition there was a large separate goods station with a three-aisled shed.



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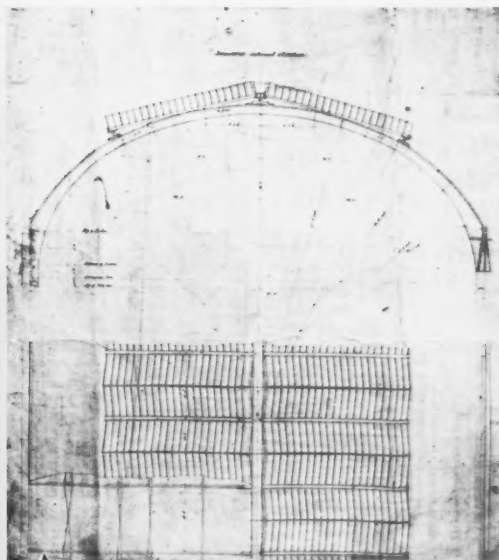
9, Philip C. Hardwick's Great Western Hotel, 1852-54, which followed Andrews's Hull-Paragon scheme in making the hotel a separate block in front of the sheds. The author stresses the point that the hotel 'is not a

part of the station, as unfortunately many visitors suppose.' 10, a view of the roof where a transept crosses the nave. 11, plan and section of the central nave roof. 12, the columns under the 'Paxton' roofs. Both 11 and 12 are original contract drawings.

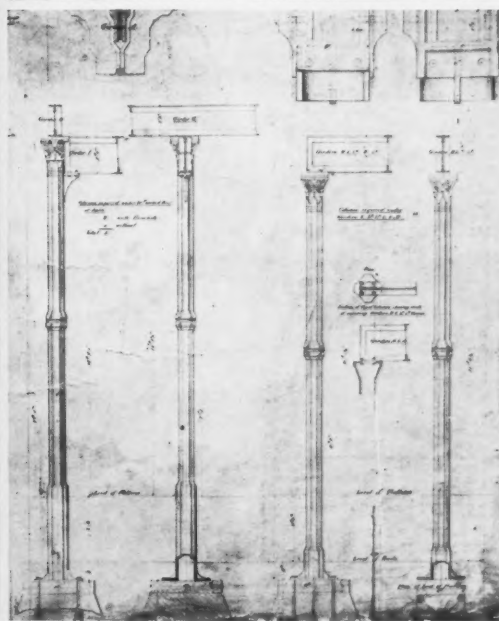
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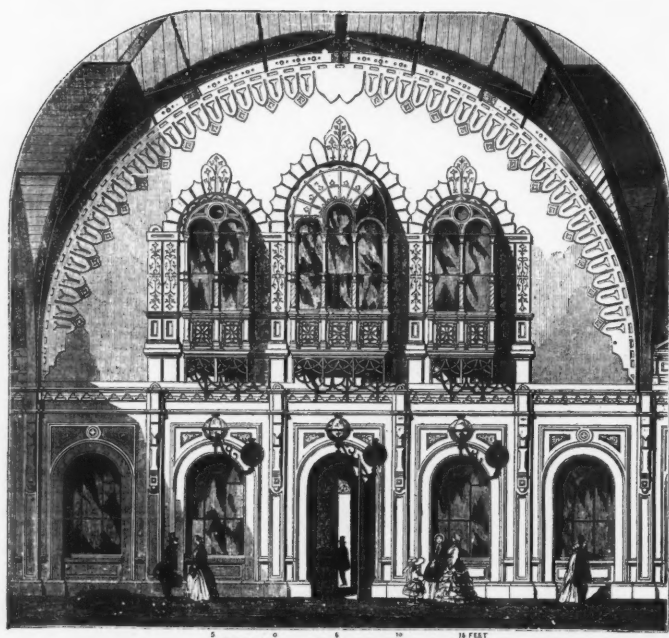


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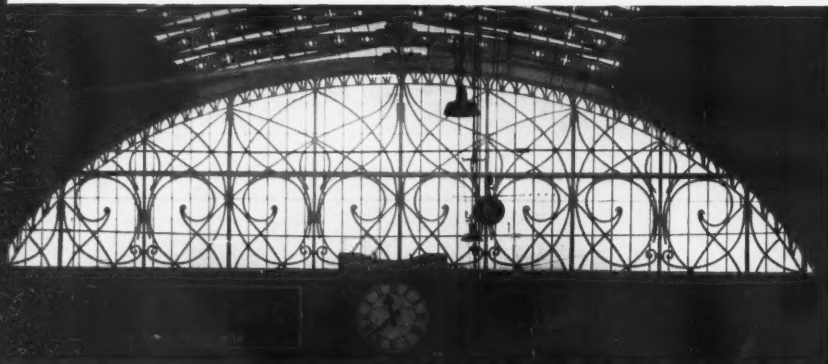
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Brunel and Paddington

14



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13 and 14, part of the station wall under the shed showing the station-master's oriel, the strange details were the work of Wyatt. 15, a glazed lunette at the end of one of the sheds, with its strap-iron bands of ornamental tracery. 16, detail of the wall at platform 1. 17, the Queen's waiting-room, now divided into two and used as offices. 18, lower storey of the Eastbourne Terrace facade, with its cement decoration in the design of which the author believes that 'Wyatt must have consciously assimilated its character to that of the ironwork.'

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engineer's architecture, if not exactly engineering-architecture.

## Paddington II

The Great Western waited fifteen years to build a permanent London terminus, but when they finally did so, Brunel provided them with a masterpiece rivalling in its richer way the severity of Lewis Cubitt's King's Cross of 1850-52.<sup>8</sup> Unfortunately, however, the Paddington complex introduced to London G. T. Andrews's Hull-Paragon scheme of 1848. There for the first time a separate hotel block was set in front of the sheds; unlike Andrews's earlier hotel at York I, it is unrelated in plan to the real station, except by incidental covered passages.

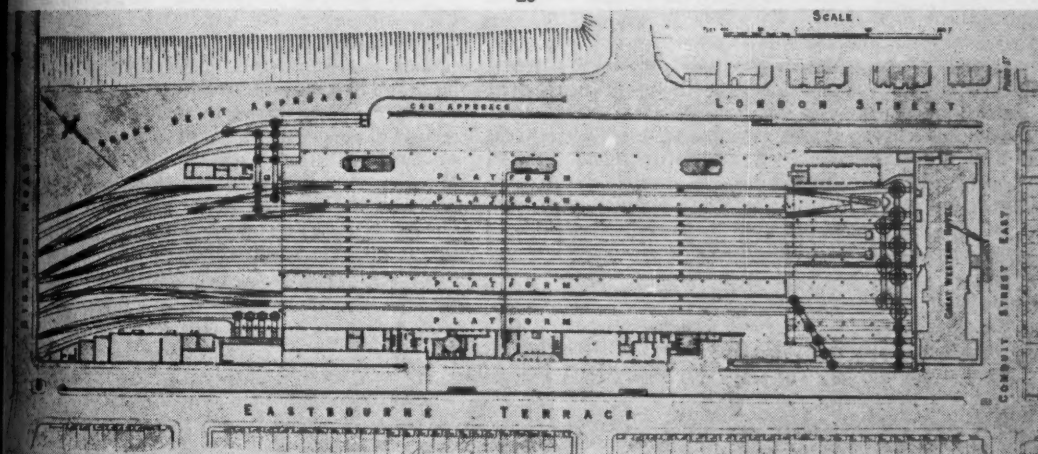
The Great Western Hotel exceeded in size and sumptuousness any earlier London—or indeed British—hotel and consciously rivalled those by Isaiah Rogers and his imitators in the United States. Curiously enough it was the work of an architect not involved in the design of the station itself, the younger (or more accurately the youngest) Hardwick. Unsatisfied with the

19, central nave of the sheds in the second Paddington Station. 20, plan of the station as laid out by Brunel. Conduit Street East is now known as Praed Street.



19

20



transepts provide a richness of space-composition and a variety of diagonal views almost unique in early railway station architecture. The glazed area of the main roofs is narrower than at King's Cross. Paxton roofs, tangent to the central arc, ride the crest of the trusses. This is not a very graceful treatment, but it is more articulated than the glazing in other railway sheds of the time.

As a collaborator on the decoration, Brunel brought in the architect Matthew Digby Wyatt. Despite Wyatt's principal reputation as an authority on Italian design, both early mediæval and

Peruzzian luxuries of Euston II, which he had completed a few years earlier, Hardwick 'imitated the French of Louis XIV,' as the reviewer in the Supplement to the *British Almanac* for 1853 put it; 'the curved roof-forms are a striking novelty here.' The stylistic significance of this very early reflection of one of the most characteristic modes of the French Second Empire—which really began only after the hotel was practically finished—is irrelevant to a discussion of the station itself. For it must be stressed that the Great Western Hotel is not a part of Paddington station, as unfortunately many visitors suppose.

Where King's Cross has two train-sheds, Paddington had three—the fourth on the right is a not unsuccessful twentieth century extension of the original scheme. Over the turntables beyond the up-end of the platforms and behind the hotel a large area, now used as a concourse, was covered from the first with low ridge-and-furrow roofs of glass of the sort evolved by

Paxton at Chatsworth and the Crystal Palace and usually called by his name. Above these to the north rise the vast glazed lunettes at the ends of the sheds unframed by any masonry. But these are unfortunately only visible obliquely around the ends of the hotel block.

There were four platforms and ten lines of track. The inner platforms were reached by retractable drawbridges, since there was no cross platform at the up-end of the tracks such as the concourse behind the hotel provides today. The three 'naves' of the shed totalled 238 feet in width, so that even the broad central one did not exceed the spans of King's Cross. The elliptical (more accurately five-centred) trusses are of wrought iron, 16 to 18 inches deep, of I-section and untied. Brunel gave the system rigidity by flaring out the bases of the cast-iron columns and bolting them to heavy concrete footings. Two 50-foot 'transepts,' for traversing frames (a device used instead of turntables) were of the same construction as the three naves and break the continuity of the straight perspective views. But in their turn these

Renaissance, he came from a modern-minded milieu. He had been chairman of one of the committees of the Great Exhibition and continued to be a close associate of Henry Cole. Wyatt was also one of those who were working on the Architectural Courts at the Sydenham Crystal Palace at this time.

Brunel's instructions that the decorative work at Paddington should be unrelated to any style of the past and specifically suited to the materials which were to be employed—iron, glass, and cement—represented a challenge to Wyatt and not a solecism. Moreover, the critical world of the early fifties was ringing with loud attacks against 'copyism,' and calls for 'progressive development' were continually heard from many quarters.

Wyatt was asked to assist as a decorator, or more accurately as an expert on ornament. Perhaps therefore only the ornament should be considered his. Yet there seems to be so much integration between the general handling of the space and the particular forms of the metal elements, both structural and ornamental,

<sup>8</sup> It is worth noting that the primary responsibility for King's Cross was the architect's, while for Paddington it was the engineer's.

that a true collaboration in design between Brunel and Wyatt may, I think, be assumed. The drawings sent by Brunel's office to Fox, Henderson and Co. for the principal contract include all the executed detail of the cast-iron columns with their elaborate 'capitals.' These are vaguely Alhambraic, but still more closely related to the overlappings and penetrations of form in the detail of Edward Buckton Lamb.<sup>9</sup> This detail is certainly novel enough and also suitable to the casting process; yet it is not intrinsically elegant and suave like Cubitt's rather Late Georgian iron spandrels at King's Cross. Other sorts of ornament in the executed work—the strap-iron bands which provide a sort of purely ornamental tracery in the lunettes at the end of the sheds, the pierced stars that lighten the web of the arched girders, and the semi-foliate curves of strap-iron that fill their lower ends—do not appear in these drawings and were probably added at the site on a separate contract from Wyatt's designs.

Only every third arched girder is supported by a column; those between rest on the horizontal girders which run the length of the sheds between the naves. Complex as is the treatment of the juncture of the arched and horizontal girders, both above the columns and in between, structural and decorative considerations are effectively fused in a fashion that is full of 'character' and 'reality.' These were the newly desired qualities of High Victorian architectural expression. To many contemporary critics they justified a great deal of clumsiness and coarseness which was the more acceptable as a conscious protest against the pretty frippery of Early Victorian detail. Certainly the contrast with the mock-castellated detail Brunel used on Temple Mead I is very striking and all to the advantage of Paddington.

Although there were originally some island enclosures on the arrival platform at Paddington, the sheds were essentially open on all sides except along the departure platform. There the wall of the waiting-room and office block carried and abutted the arched girders of the departure shed instead of a fourth range of columns. This wall is for the most part visible only up to the height of one storey under the shed roof. On the outside a long marquee detaches the elaborately decorated ground storey from the bare storeys of company offices above. This upper portion is in any case only seen from the higher level of Eastbourne Terrace beyond, while the traffic approaches down the incline from Praed Street (then Conduit Street West).

The walls of the ground storey of the station block consist of ranges of arched openings with 'pilasters' between. The upper half of the pilasters is occupied by flattened brackets quite comparable in design to the 'capitals' of the isolated cast-iron columns. Fat ovolo mouldings sur-

round the arches and the spandrels and in the centre of each of the spandrels there is a small panel of tightly scrolled relief decoration. All this detail looks like iron: if it is not executed in iron but in cement, Wyatt must have consciously assimilated its character to that of the ironwork. This was something that had hardly been done before, even by Francis Thompson.<sup>10</sup>

At the transept ends high lunettes of wall are visible. These are in each case occupied by three arches from under which project arcaded iron and glass oriels. One of these is in function a glorification of the tiny bay windows on way-stations from which rural station-masters looked up and down the line. But the Paddington station-master controlled a vast and complicated spectacle and so looked down upon it from a sort of royal box.

Since Paddington was the London terminus of the Queen's frequent travels between London and Windsor, there was here in addition to the usual suites of ticket offices, waiting-rooms and refreshment rooms for different classes, a royal waiting-room comparable to that which Tite had provided at the Windsor station in 1850.

Upstairs very extensive office accommodation was provided in several storeys, and these are still occupied by the principal officers of the railway. In the chief engineer's office many valuable visual and other documents are fortunately preserved concerning Paddington and other major works by Brunel. The drawings of Wyatt, which might help to explain the theories behind his fantastic detail, are however missing.

This detail reaches a climax of the 'Victorian' (which was soon to be a technical word for ornament that was in intention original, not 'copyistic') not in the Queen's Waiting Room,<sup>11</sup> but in the treatment of the walls around the station-master's oriel and its mate in the other transept. The pilasters between the oriels are covered with flat incised ornament, which is repeated on the double, cusped keystones; while the voussours of the arches have concave scallops on the extrados. Around the edge of the arch of the transept roof is a sort of pelmet of pierced flat shapes. This is rather like the edging of lace-paper in a candy box, but of the coarsest character. It seems to stick out stiffly in order to enframe the lunettes of wall. These things, like many later examples of the selfconsciously 'Victorian,' are less acceptable to twentieth century taste than the fat, iron-casting character of the detail on the walls below, but they are neither imitative nor can they properly

be called illiterate. For we know that Wyatt was a man of very wide and sensitive knowledge of the ornament of the past.

It is appropriate that Paddington should be the subject of one of the most famous of Victorian anecdotal pictures, Frith's 'Railway Station,' of which the Great Western hang in their offices one of the several replicas by that canny master. It might be hoped that the painting would give us accurate evidence on the original colour. Unfortunately by 1861, when the picture was painted, Paddington had itself been repainted a muddy brownish grey. But the polychromy was even at the first timid, merely accents of red on a grey ground.

Asked some years ago by the then architect of the railway what colour I thought Paddington should be painted in the course of post-war repairs, I answered as an historian: grey with touches of red. Considering the many suggestions of Owen Jones's ideas in the detail, I would now rather say, as a critic, that the theories of Jones's important lecture, given at Marlborough House in 1852, on the 'Science of Colour' should if possible be applied. Certainly no single colour, and least of all a respectable pale green or buff, can do justice to Wyatt's detail—nor even perhaps to the magnificent complex of space, whether that be due to Brunel alone or the result of his collaboration with Wyatt. Perhaps as a compromise the Great Western livery colours, chocolate and cream, if boldly contrasted in the detail, would serve. In any case Paddington, like the other great Victorian station of the fifties in London, King's Cross, remains physically in excellent shape.<sup>12</sup>

It was fortunate that the admiration of Lord Portal, chairman of the Great Western before nationalization, for the last large station with train-sheds in the Victorian tradition, that at Milan, could not, in the circumstance of the first post-war years, lead to its replacement by a station neither modern nor Victorian. Now that they are state property the maintenance of the great Victorian stations as cultural monuments becomes a public responsibility. Of this responsibility one feels assured the members of the Royal Fine Art Commission are well aware. For the stations are presumably too late in date to receive the protection of the Royal Commission on Historic Monuments.

Paddington and King's Cross epitomize the critical problem of engineering-architecture and the particular question of artistic responsibility in such work. Not the least interest of Paddington is the fact that while Brunel certainly dominated in its design, he was not content as at Temple Mead I to leave its detailing to the draughtsmen in his office, but called in an architect as collaborator; while at King's Cross an architect had the prime responsibility. In both cases the results are notable examples of the sort of design that recognizes architectural responsibilities beyond the immediate provision for practical function.

<sup>12</sup> Although the steel replacements of some parts introduced since the war, I am informed by Leo de Syllas, are inferior in design to the original iron.

<sup>9</sup> Although Lamb's finest work belongs to the period after Paddington was completed, what may be called 'proto-High-Victorian' character is evident in his detail as early as his contributions to Loudon's *Architectural Magazine* in the thirties.

<sup>10</sup> The trabeation of the masonry detail on the Britannia Bridge echoes the trabeation of the iron tubes themselves, but the quarry-faced ashlar of Anglesey marble hardly imitates the character of iron in detail. Of course the decorative patterns on the sides of the piers copy, naturalistically as it were, grilles of iron, but the smooth-cut marble is scaled to the surrounding rough ashlar.

<sup>11</sup> Wyatt received proposals from Alfred Stevens for decorations in the Queen's Waiting Room. Three letters from Stevens to Wyatt are preserved at the Victoria and Albert Museum concerning these designs. I owe this information to Miss Pamela Reekie of the museum staff.

TON

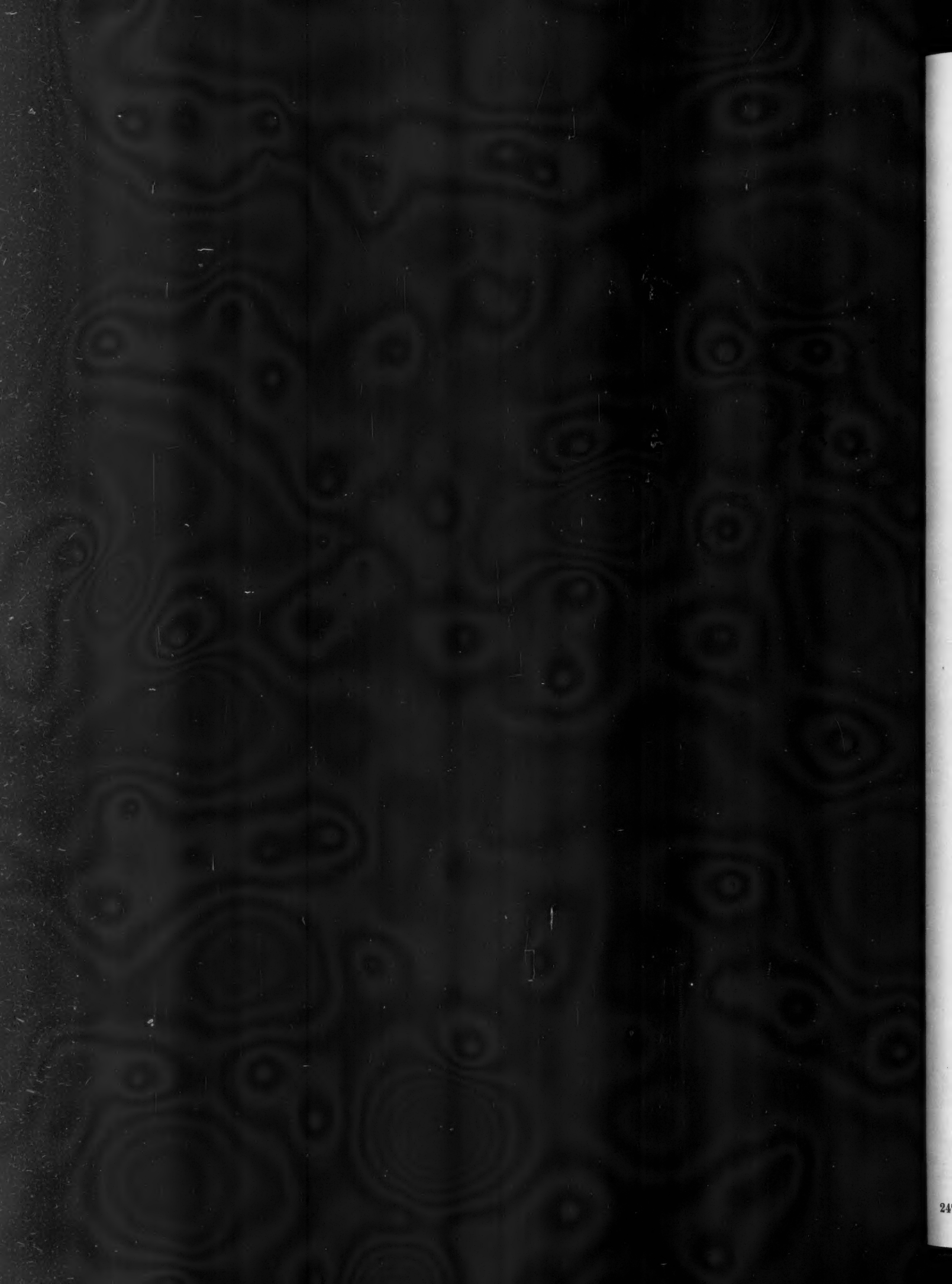
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**current architecture** a revival of a pre-war feature. To supplement the detailed illustration of outstanding new buildings, recent buildings of interest are here briefly illustrated.

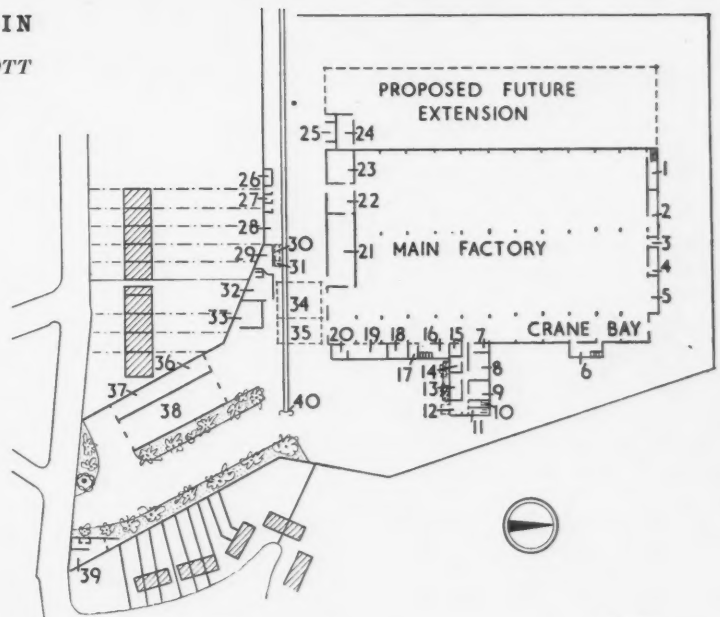


1, view from the south-east.

## FACTORY AT INCHICORE, DUBLIN

ARCHITECT: MICHAEL SCOTT

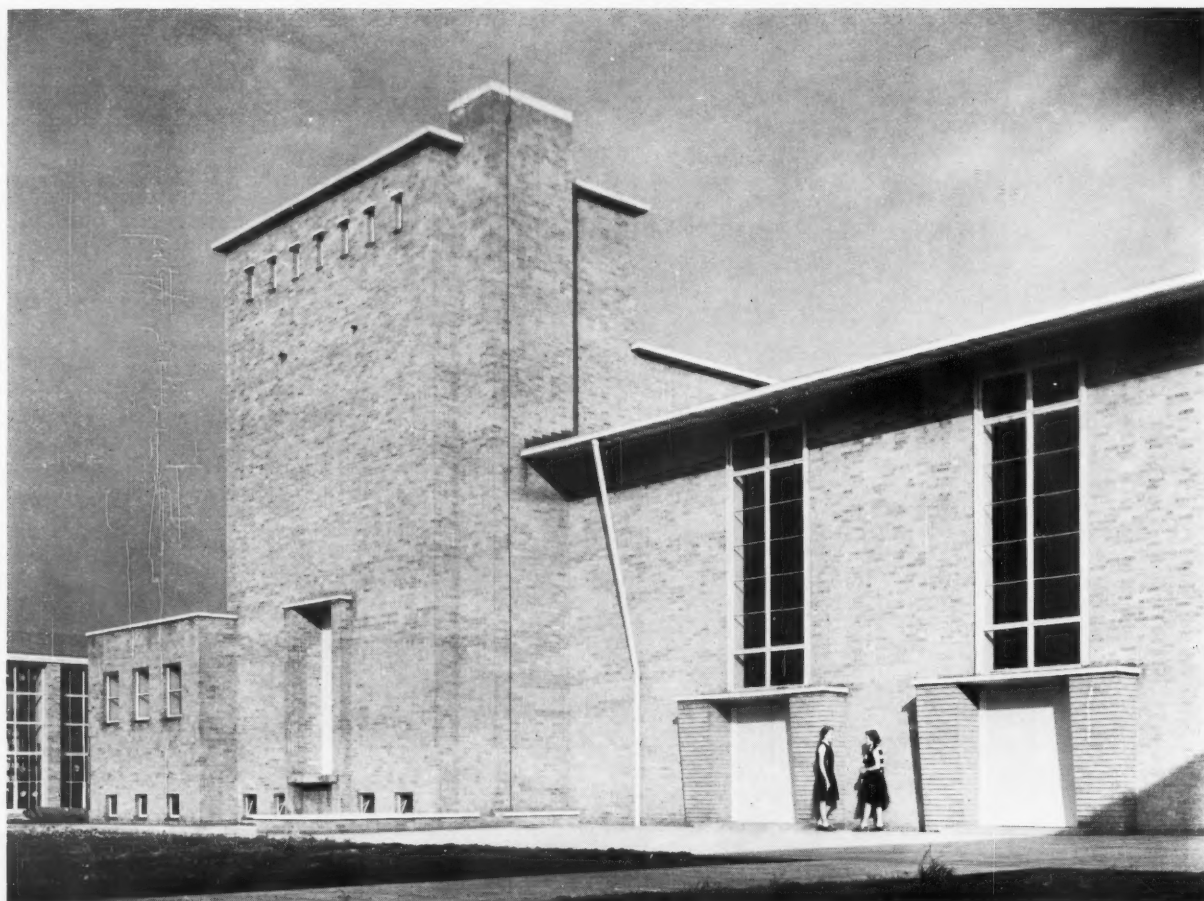
This factory for the nationalized Irish transport system has been designed primarily for the production of bus and lorry chassis and relative parts. Offices for administration, planning and production are included. Sections for specialized processes are placed at the north and south ends of the factory giving direct connection with the main production areas. The crane bay runs the full length of the main factory on the east side, conveniently situated for the entrance and leaving the west side free for future expansion. The building is steel framed with steel roof trusses over the main factory area. External walls are of 9-inch concrete blocks and interior walls of 6-inch. Floors generally are concrete. The Dublin Corporation insisted on all steel stanchions being encased with concrete as a protection against fire. Roofs are mainly of corrugated asbestos with plaster-board backed with aluminium foil as insulation. Flat roofs, made of concrete roof slabs, are asphalted, ceilings being lined with cork and plastered. The east side of the crane bay is finished with vertical patent glazing on a steel framework. External walls of offices, cloakrooms and lavatories have continuous steel windows extending from the plinth to the roof beam. Walls of offices are plastered and lavatory walls and floors are finished in terrazzo. Office floors are covered with linoleum. The office block porch has a timber canopy with striated plywood soffit and is supported on tubular metal columns.



site plan

### key

- |                                 |                            |                          |
|---------------------------------|----------------------------|--------------------------|
| 1, toilet.                      | 14, manager.               | 28, swarf house.         |
| 2, store.                       | 15, foreman.               | 29, oil store.           |
| 3, emergency exit.              | 17, first aid.             | 30, fuel oil tank.       |
| 4, millwrights and maintenance. | 18, conference room.       | 31, petrol tank.         |
| 5, test benches.                | 19, cloakroom.             | 32, boiler house.        |
| 6, 10, 16, gents' toilet.       | 20, drying room.           | 33, compressors.         |
| 7, print store.                 | 21, heat treatment.        | 34, unpacking bay.       |
| 8, materials and production.    | 22, shot blast.            | 35, crane bay extension. |
| 9, planning department.         | 23, plating and polishing. | 36, washing.             |
| 11, ladies' toilet.             | 24, switch room.           | 37, painting.            |
| 12, lobby.                      | 25, transformers.          | 38, chassis testing.     |
| 13, typists.                    | 26, fuel oil tanks.        | 39, gate lodge.          |
|                                 | 27, swarf bins.            | 40, railway siding.      |



2, the assembly hall.

## SCHOOL AT LITHERLAND NEAR LIVERPOOL

THE LANCASHIRE COUNTY ARCHITECT'S DEPARTMENT

The three-form entry secondary modern school for girls at Litherland, the first to be completed for the Lancashire County Council after the war, accommodates 510 pupils. The first stage, with accommodation for 270 pupils, a temporary staff room, lavatories and boiler house took thirteen months to build. The site, which is level and covers an area of 27.8 acres, is situated on the fringe of a post-war housing scheme. Provision has been made for eight hockey pitches, eight hard tennis courts, a cricket pitch and a running track. Two acres of ground have been set aside for school gardens and a number of flowering and ornamental trees and shrubs have been planted. The school is situated at the north corner of the site. All classrooms face south-east and are housed in one wing. Practical rooms are situated in two wings, in one wing at ground floor level, in the other at first floor level over the cloakrooms and lavatories. The gymnasium, dining room and kitchen, which can be isolated for evening community activities, are linked to the assembly hall by a covered way. The structural frame is steel, the walls having a  $4\frac{1}{2}$ -inch brick outer skin, a cavity, and  $2\frac{1}{2}$ -inch hollow tile blocks. Suspended floors



are generally of precast concrete, the roofs of aluminium and steel decking with *in situ* reinforced concrete. Fascias are of aluminium sheeting and window frames steel. Walls are finished with sandfaced hand-made golden brown facing bricks. Sills, surrounds and copings are of artificial stone.

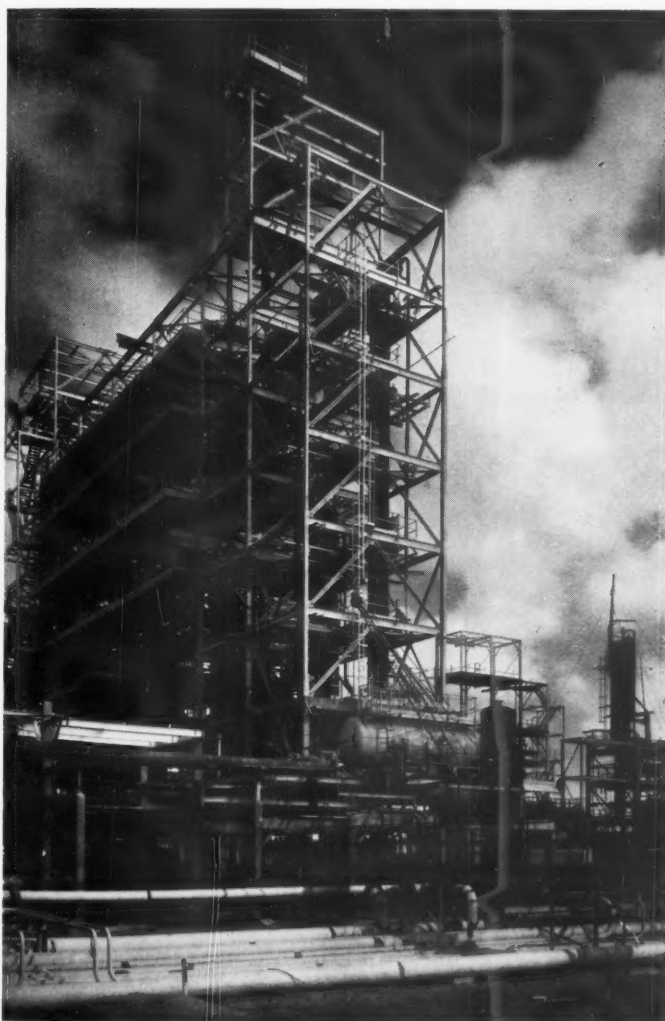
Classroom floors are finished with  $\frac{1}{4}$ -inch resin bonded aggregate, adjoining corridors with linoleum; practical rooms and corridors on the ground floor, kitchen and dining room are finished with asphalt; practical rooms and corridors on the first floor with composition tiles, and the assembly hall with wood blocks. Walls are plastered. Radio diffusion, electric clocks, period changing bells and alarm bells have been provided. Service mains are carried in ducts under the corridor floors.

## School at Litherland



3, part of the classroom block.

## FACTORY AT WILTON NEAR MIDDLESBROUGH



4, part of the Olefine Plant, looking east.

This 2,000-acre site, which includes Wilton Castle, in north Yorkshire is being developed by Imperial Chemical Industries for the production of many plastics and their chemical bases such as phenol-formaldehyde moulding powder and 'Perspex' acrylic resin. Other installations on the site will produce ethylene, methane-hydrogen, propylene and butane from crude oil. At present 3,000 workers are employed on constructional work on the site, and 500 more are manning plants already in operation. When the first stage of the work is completed approximately 4,500 workers will be employed at the factory. It will cost some £22,000,000. The Engineering Department, Wilton Works, are the architects.

5, two vessels for the storage of gas under pressure.





## current architecture

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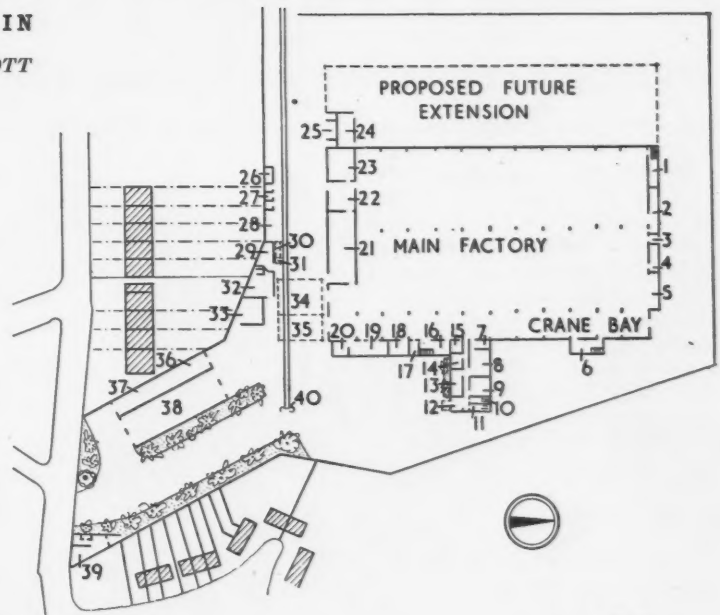


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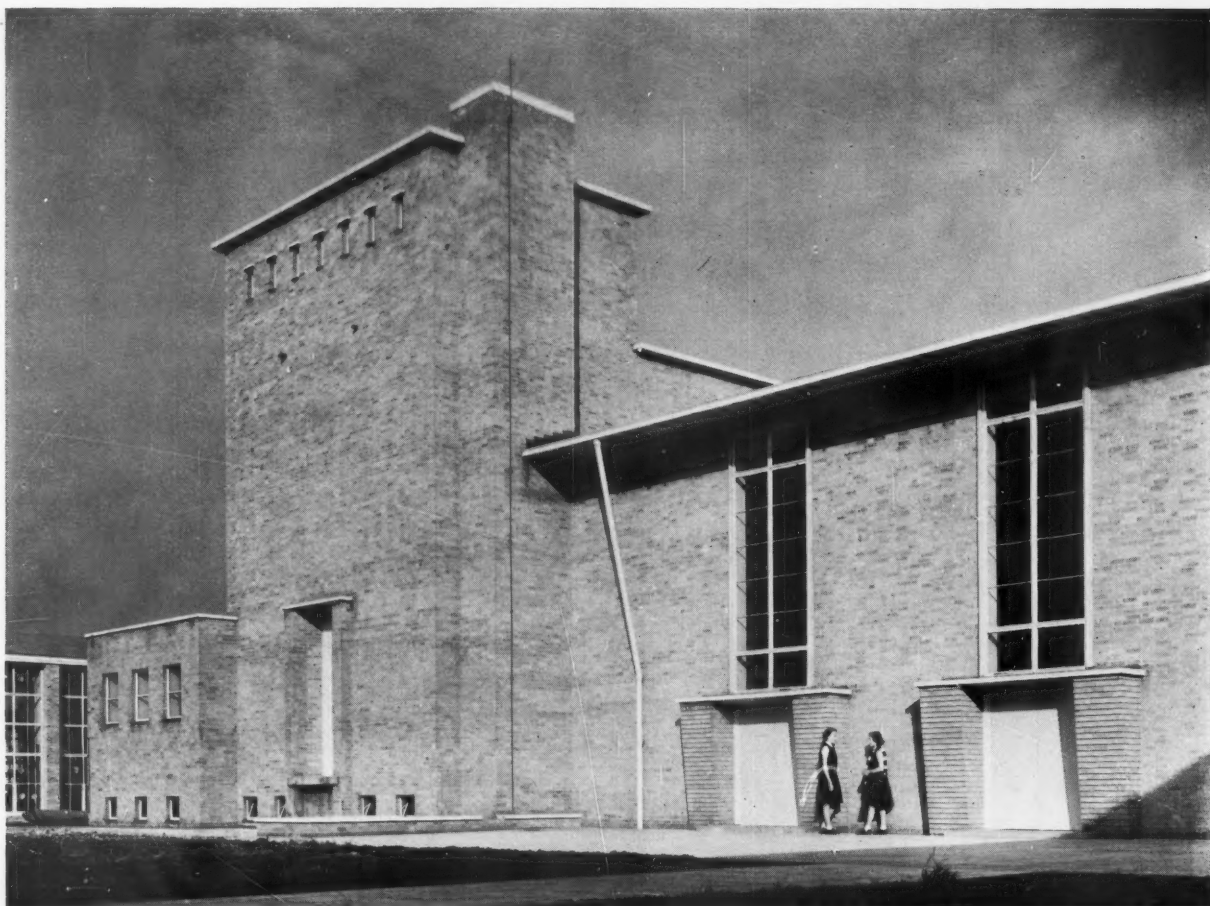
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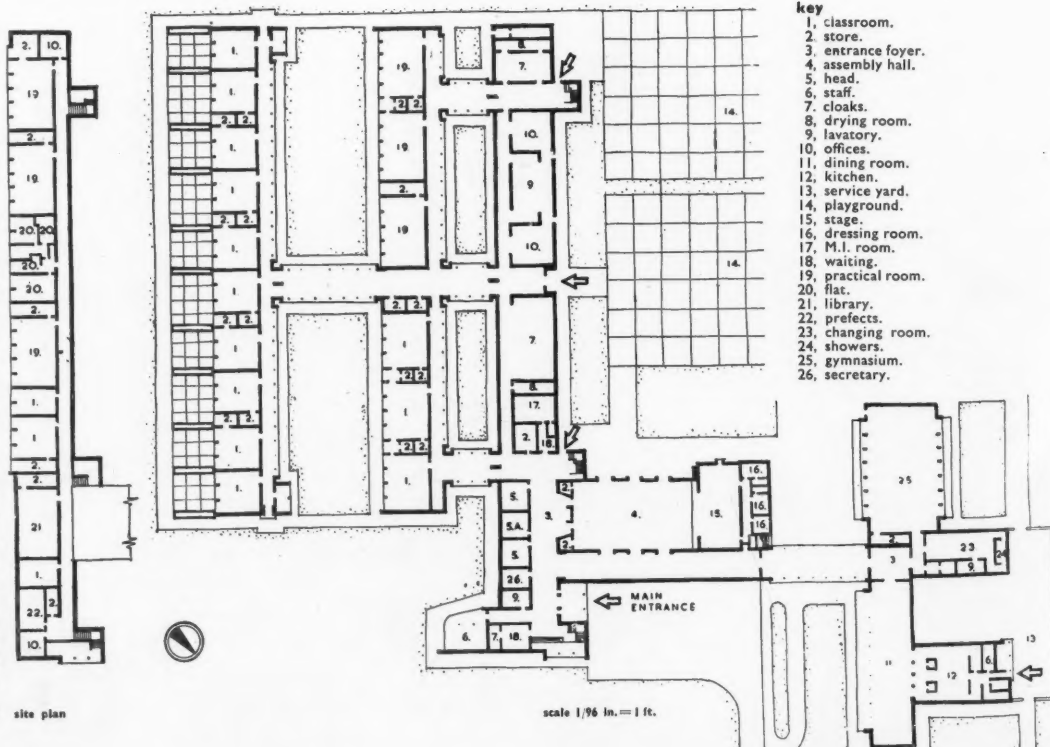


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5, two vessels for the storage of gas under pressure.





6, west facade of typical three-storey flats.

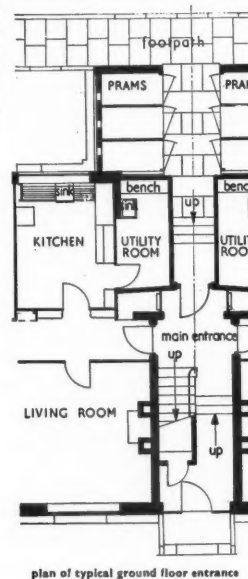
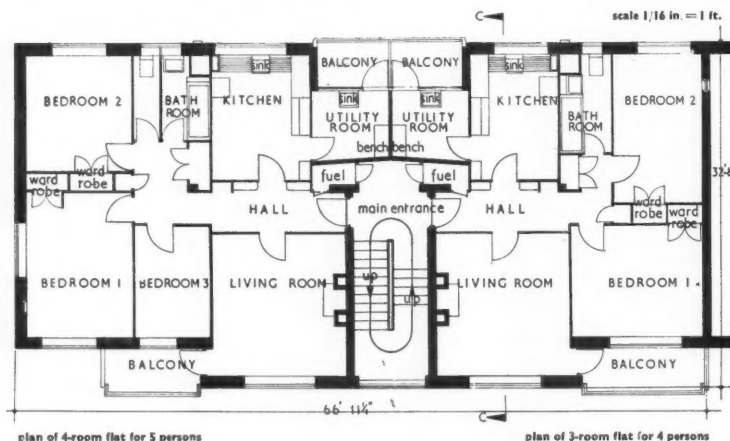
## FLATS IN NORTH KENSINGTON LONDON

ARCHITECTS: EDWARD ARMSTRONG AND BRIAN O'RORKE

Henry Dickens Court is a housing scheme which, when complete, will comprise 300 dwellings for 1,300 people. Accommodation is being provided for large and small families and for single and old people. Four three-storey blocks have been completed. Eight blocks of three-storey flats and terrace houses will flank a central space, from which two ten-storey blocks will rise. The three-storey flats are arranged in pairs separated by an area of grass. By grouping the service facilities between pairs of blocks the number of regulations necessary to maintain tidiness are minimized. Trees will later be planted. The flats illustrated are for families of four to six persons. Each flat is provided with a utility room with clothes washing equipment, which

opens on to a recessed back balcony.

Exterior walls are of 13½-inch load-bearing brickwork with reinforced concrete spine beams and hollow tile floors. Roofs are of light steel trusses and partitions of concrete breeze blocks. Facing bricks are brown Sussex and the roofs are finished with double Roman tiles. Balconies and trim are in fair-faced concrete, painted. Stair walls are rendered and painted with hard-wearing blue-grey cement paint. Staircase balustrading and entrance doors are painted deep blue. Windows and frames are off-white; floors are plastic laid *in situ*.



## LETTER FROM

### DUBLIN

Some of the high, wide, and handsome streets north of the Liffey are still being rebuilt as working-class flats by the City Fathers: the work is good, façades are 'all as before,' except for the omission of the characteristic Dublin detail, the etymologically mysterious 'patent reveal.' Plastered and painted a glossy white to match the glazing bars, it elevates the window to the level of inspired statement, compared with which the pointed brick reveal and green-painted frame are fairly flat chat indeed. Many of these windows shone one day last autumn to celebrate a religious occasion, tallow candles flanking small statues in a respectful framework of Nottingham lace. Next morning a two-storey house, with basement, had burned out—one woman was dead, three injured, the twenty-six other residents homeless.

Dublin Corporation fight this overcrowding all the time—much of the £4,000,000 they are now trying to borrow will be spent on housing and they have very definite ideas on the spending. At one meeting, a former Lord Mayor—whose name appears in *Finnegans Wake*—seeking housing priority for newly married couples, was opposed by another ex-holder of that office, himself a writer, who is reported as saying that 'while there were people living in overcrowded and rat-infested rooms, it would not be right to give houses to newly married couples.'

Housing, in effect, is news, though in Ireland, at any rate, it is not exciting news for architects. With no Medici family to patronize the profession here—is there perhaps one in Russia?—they turn to those very passionate builders, the *medici*, and that authentic medieval pun is understatement where the Department of Health is concerned. The Minister, Doctor Noel Browne, hopes to spend £20,000,000 in seven years. There are now at least thirty hospital projects in progress in the Republic. At least one of them was considerable enough to bring a contractor with a competitive price all the way from Glasgow.

Browne is too energetic to be popular, but a measure of his quality is the fact that on February 3 Dublin newspapers carried reports of the House of Commons 'Clean Food' debate simultaneously with a letter in which he asked the people's co-operation in the administration of his

clean food rules, coming into force on that date. They cover food handling from factory to consumer, stress the importance of clean hands and clothes, impose restrictions on the employment of infectious disease 'carriers,' provide for better lighting and ventilation of premises, water supply, sanitary precautions. Many food traders will have to call on their architects if they are to 'get by' under the new system.

Any Grant House Designed. Plans (working drawings) and Specification for twelve guineas. Box No. . . .

That advertisement appeared last Autumn in a daily paper. In such a climate, the architect who works to the Code seems greedy. But even the anonymous design pedlar would seem greedy to Local Government, who buy design, supervision and final accounts wholesale—direct from the architect!—at much keener prices.

Well-designed schemes have certainly been built—David Hanly's work at Sallynoggin in Dublin county, Noel Moffett's houses in Dundalk, etc., are examples—and it is understood that Dublin Corporation hope shortly to go into production on a respectable two-storey terrace job in 9 in. blocks, lined with an inch of cork, and skimmed.

But, generally speaking, the architect is called in only to legitimize a hipped, bay-windowed siamese monster, with an interlocked roof and combined drains. He is not wanted on the site; the drawings are for the county council, not for the foreman, who builds by ear; and a specification exceeding a foolscap page in length is regarded as disloyal.

That is not a picture of the Irish building industry; established firms share the architects' dislike of the tip-and-run school of construction. Excellent work is being done all the time by good builders, both for private firms and local authorities; the standard demanded by Dublin Corporation and County Council, in particular, is being raised constantly.

Since the handsome Housing (Amendment) Act of 1948, according to official figures, only 5,908 'Grant' houses were built by private enterprise generally, 8,000 were still 'in hands' last August; another 3,750 is the maximum expectation for this year, with an additional 'erection programme' of 7,500 houses.

The corresponding figures for local authorities, inventors of the dread 'direct labour' weapon, are 10,574 houses up to

last August, when 10,211 were in course of erection; 8,000 in the next twelve months, with another 10,500 on the stocks. In December, 1949, the Deputy Prime Minister estimated the country's current needs at 70,000, and the total at 110,000 houses.

A new Act has superseded the 1948 edition of the Housing (Financial and Miscellaneous Provisions) Act of 1932, and, judging by the applications coming in, the trek back to the land is not seriously contemplated. The 1948 Amendment subsidized 500 to 1,250 square-footed houses: H(A)A, 1950 runs the floor area up to 1,400, alters the valuation basis from 'market value' to something nearer 'cost of construction,' extends the grant to purchasers of erected houses, and brings the scheme within reach of those who cannot afford an initial deposit exceeding £100. Under the former Amendment the maximum grant was £275 for a five-roomed house—£285 to a Building Society member—and a deposit of at least £250 was needed.

The 1948 Amendment had the unpredictable effect of suggesting that building was essentially a spiv operation, where skill would amount to cheating. Innocence of craft is excusable in a rich man—cf. Lord Chesterfield's remarks about the Earl of Burlington—but, for the last couple of months, the number of judgments for unpaid accounts registered in the Dublin courts against 'contractors' has shown that these amateurs lack even that quality which lends charm to all men, wealth.

Niall Montgomery

## TOWNSCAPE

### TRIM

*More and more the things that the REVIEW has classified as trim (January '50, 33) must and will be products of conscious design. But beware lest conscious design become self-conscious design. Ars, here anyhow, est celare artem. Which, translated, means: 'There is a fine tradition of design in these things, the functional tradition; follow it.' For an example of what happens when art takes over in a sphere in which for hundreds of years the functional tradition reigned supreme—the waterside—see next page.*

Flowers are difficult things to incorporate in the urban scene at the best of times; to plant them in the top of a monumental brick plinth is one of the ways *not* to do it. Or, rather, a would-be monumental plinth—for its efforts in this direction are spoilt by the fancy brickwork round the top. To do this sort of thing up against water is a particularly gross crime, since the waterside can be trusted to provide its own touches

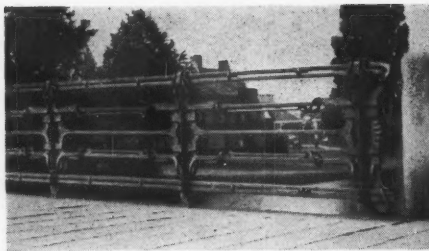


of monumentality, like the bollard above, which is no less monumental for being completely functional at the same time.

The Dutch, from whom these come, although in their quayside architecture they have one of the world's great collections of functional art, have become in the twentieth century one of the most popular and subtle mixers of artiness with engineering, flower-boxes with water steps, geraniums with lamp-posts, arty brickwork with knee-high walls. Allowed that they do it much better than we do, they still don't get away with it, and Europe's blind adulation of



'Dutch brickwork' has led them to make nonsense of their tremendous functional tradition by hotting it up—with the kind



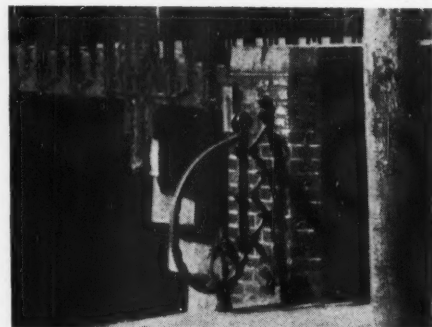
of results we all know (bottom left and above).

But let us take a much more subtle example. Here we have another Dutch flower-box (horrid really), together with a dwarf railing that ends in an ornamental curl. Now a curl is a perfectly legitimate



way of ending off a pipe rail; above is the standardized Dutch canal-side rail and tack-up which has been in production continuously since the seventeenth century, as paintings of that date show, is a good vernacular example. But in the former the device has gone wrong: the taper, and the too calculated, drawing-boardish spiral have made it over-obtrusive and self-conscious. When Design of this kind really gets busy it soon forgets about *raison d'être*. What possible purpose can have been envisaged for the low rail except to trip drunks and children into the canal? The awful fate that overtakes the hotters-up is seen again in the last photo where the

designer has set out to express his own individuality, in a way that has 1920 period charm (for us to-day) but becomes a menace when it threatens, as it does, the bases of the functional tradition. Most



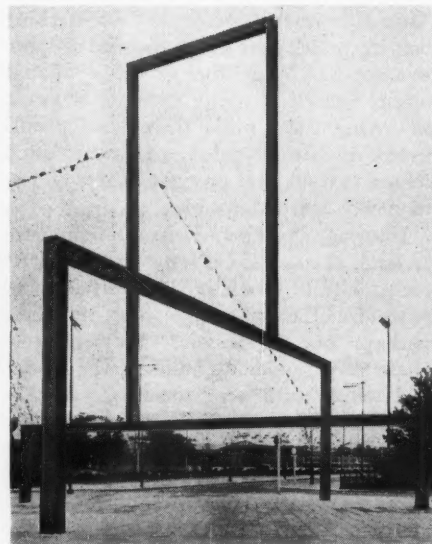
borough surveyors and engineers to-day are ignorant of the existence or meaning of the functional tradition, but think the Dutch are wonderful at introducing art into municipal trim.

I. Smith-Raeburn

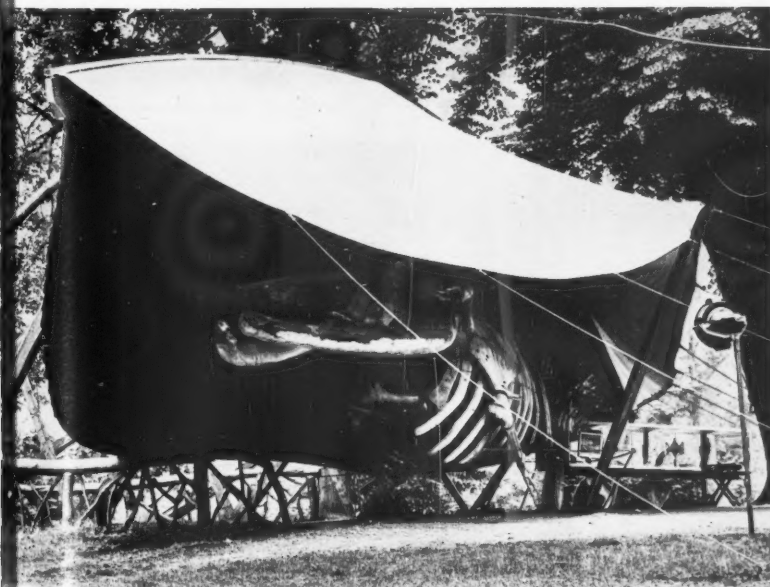
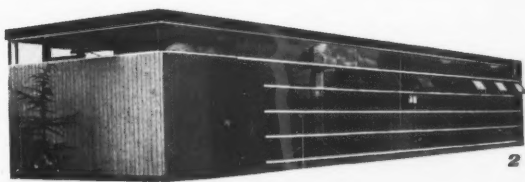
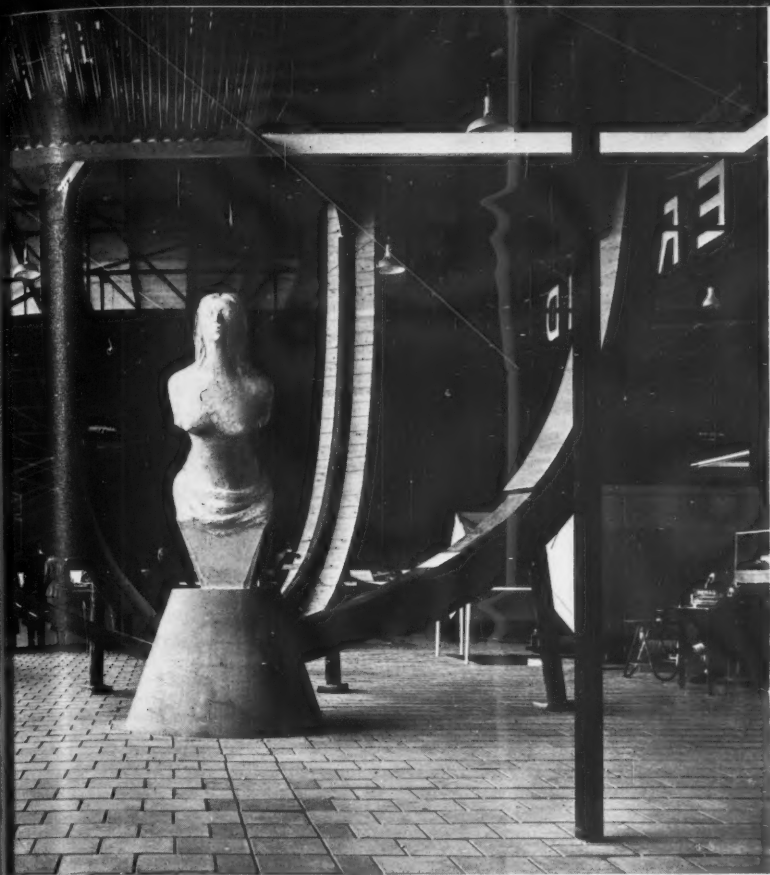
## EXHIBITIONS

### ROTTERDAM AHÖY

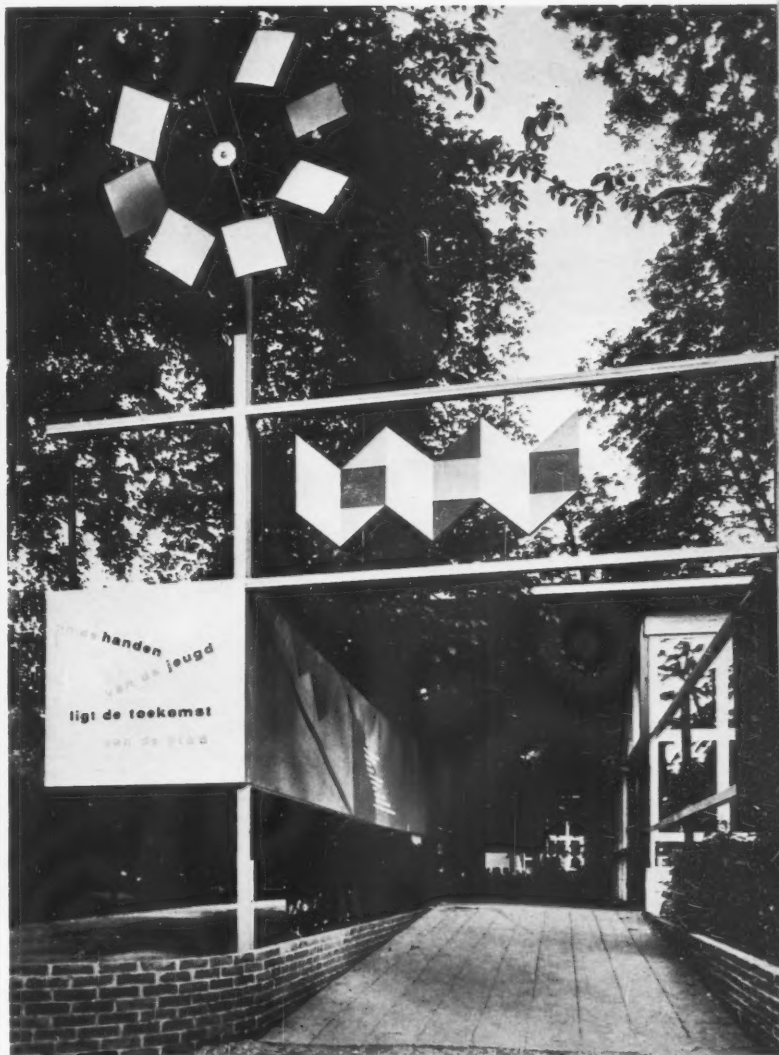
The exhibition held in Holland last year, Rotterdam Ahoy, though disappointing in layout, was remarkable for some skilful effects produced by simple methods. The symbol of the exhi-

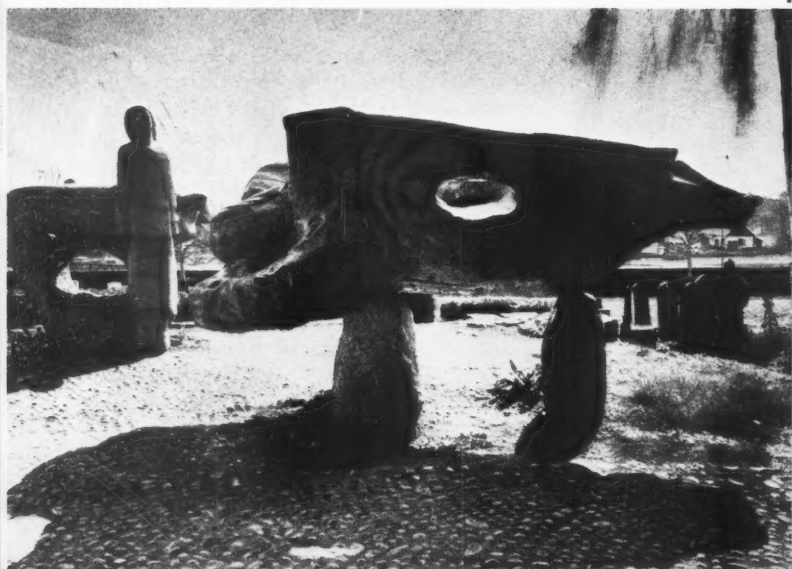


bition, a welded steel structure, above, like the buildings 2 and 4 on the facing page, suffered perhaps in the context of an exhibition from an excess of simplicity. 1, 3 and 5, however, made brilliant use of simple forms, the effect of which was heightened juxtaposition in 1 to a ship's figurehead, and 3 to the skeleton of a whale. The arched forms in 1, the exhibit of the metallurgical industry, showed the development in structural methods from



Rotterdam ahoy





the wooden to the welded steel frame. 2 was a temporary wooden building used as a staff room, 4 the Rotterdam Pavilion, which housed an exhibition of the birth, growth, devastation and future of the city and 5, the entrance to the pavilions erected in Rotterdam park. The architects were J. H. van der Broek and J. B. Bakema.

## TOWNSCAPE

### PROGRAMME SCULPTURE

*In a fully realized townscape every street is its own sculpture gallery. Of course that doesn't mean rows of worthies in bronze, or even personages in iron. Hydrants, pillar-boxes, bollards, pumps, lamp-posts—these are some of the many things which may be sculpture in the street. But there is a place for sculptor's sculpture too, particularly—and this is the point—if it is strictly ad hoc, purpose-made in relation to its surroundings.* And having established that principle, can't one go further and get sculptors to employ their own special kind of creativeness in the production of objects for the street, of a more or less utilitarian nature, thus opening up for them a whole new field of activity? The lower two of the photographs opposite show the results of a sculptor doing just this. (The fact that the setting of neither is strictly a street is immaterial.) On the left is the granite basin in the garden-courtyard of the Congress Hall at Zurich (AR, November, 1945) and on the right the Forel fountain at Zurich Polyclinic (the stark iron water-pipe is particularly moving). The limestone figures seen by day and by night in the upper photographs do not belong to exactly the same category: yet they have obviously been conceived in relation to their surroundings—in Hombrechtikon Cemetery; in consequence they are not objects in a landscape but *landscape-objects*. The sculptor of these three works, Paul Speck, was born in Hombrechtikon near Zurich. In 1914 went to Munich where he joined the Blaue Reiter group of expressionist artists. After working for some years in a small pottery he became head in 1923 of the ceramic department of the State Majolikamanufaktur in Karlsruhe, where amongst other work he was responsible for the prototype designs of mass-produced pottery; he then went as teacher of applied sculpture

to the Baden county art school. With the rise of the Nazis Speck left Germany, returned to Zurich and entered into an artistic partnership with the painter Max Hunziker. Speck's most important works since his return to Zurich have included (besides those illustrated) the Antonius altar of white faience in the St. Karl Church at Luzerne.

Andrew Hammer

## LETTERING

### SANS STYLE

*Is there a belief among those responsible for lettering on public signs that the use of the sans serif letter vindicates their modern outlook and, as it were, establishes their claim to be in the charmed circle of those who are doing the right thing?* Its constant misuse suggests that there is, that the sans letter possesses some inner grace whereby deformity and ill-spacing are thought to be counteracted. In 5, on the facing page, the ill-effects of the lettering on the long arms appears to be the result of foreshortening, and Lidstone looks as if it is right because it is seen from the right angle. 6, however, gives the game away. So positive are the faults of spacing, so horribly deformed the letters, it is difficult to believe that the person who put it up could have regarded it as other than a piece of sans, to be accepted as sans without further criticism. But with sans as with other letters subtleties of proportion, form and spacing are all-important—as the rest of the lettering on the signpost shows. This, whether seen dead-on or in perspective, is admirable, a model for all signpost letterers. The quality that Lidstone (and Oxford County) possess that the other names don't can be summed up in one word—style—that which comes to those who *care* for character, line, form, proportion, and which is as important to the sans letter singly and in association as it is to any other typeface. One of the puzzles of our age is why, when there are examples like Lidstone to use as models, they aren't used.

I. de Wolfe

## INDOOR PLANTS

### ZIMMERLINDE (Tiliacaea)

*The Zimmerlinde, which is better known to florists as Sparmannia africana, is of the family of Limes, as its popular name implies, and is*

*a native of South Africa. It is mentioned in Loudon's Encyclopædia of Plants as being named after the eighteenth century Swedish traveller Andrew Sparrman, the pupil of Linnæus, who introduced it to Europe after one of his voyages to the Cape.*

It is a very useful evergreen, with large, broad, unequally toothed leaves which are from five to six inches long. It bears white, lime-like flowers in spring when from three to four feet high. In its native habitat it develops into a small tree from fifteen to twenty feet in height. In this country it is a greenhouse or a house plant, which is easy to grow, and is strikingly decorative.

The Zimmerlinde requires plenty of light and air. It stands up to the vagaries of our indoor temperatures in the winter and in summer it is best plunged into the garden border. It needs frequent syringing in dry weather, and its roots should be kept moist. It is advisable to prune it hard in February and re-pot as soon as new



growth appears into a compost of three parts fibrous loam and one part leaf mould. It is propagated by cuttings, which can be planted in sandy soil in a temperature of 65° or under glass until rooted.

H. F. Clark

## POPULAR ART

### CZECH VILLAGE ARCHITECTURE

*The Czech village as a picturesque period piece lives no longer. Its characteristic architecture was a product of certain social conditions of the past. These conditions have now*

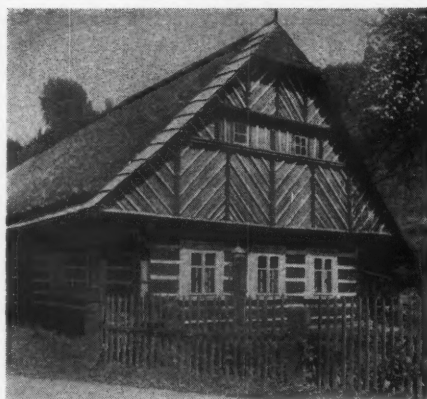
radically changed, and the life and appearance of the village in Czechoslovakia will assume new shapes along lines not yet fully visualized. Two types of buildings give the typical Czech village its distinct character: the timber cottage and the walled farm. As anywhere else there is of course plenty of architectural dross in and around the villages, especially near large towns, the product of the social and architectural disorientation of the late nineteenth and the twentieth centuries. But there are plenty of villages still unspoiled in their original setting.



Wayside shrine near Sobeslavsko, Southern Bohemia.

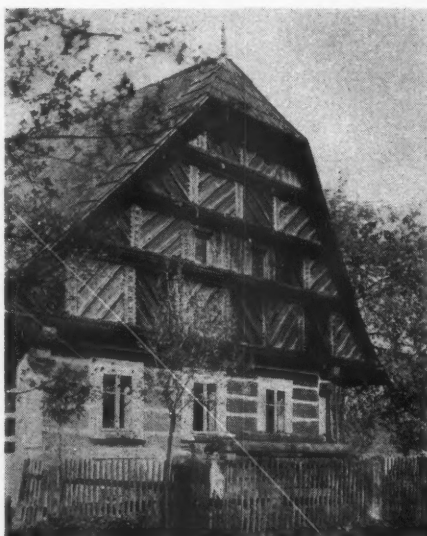
Timber houses may be found all over the countryside, especially in the hilly districts. They are closely related to similar structures in the Slav territories further east, but also to the village architecture of the western neighbours. Basically these houses are still the same as in the dawn of Czech history, some thousand years ago—only the dividing of the inner spaces has undergone certain changes; and through the influence of style after style devised on higher social levels the village houses have successively adopted one kind of sophisticated decoration after another.

Apart from simple cottages with boards laid horizontally and pointed with mortar, we find in Bohemia highly decorated specimens, some of which, in the Trutnov district and in the Jizera valley, are among the most beautiful in Europe. Their mighty roofs with gables richly panelled in an ever recurring zigzag pattern, their arcaded balconies, their



Farmhouse at Usti.

cheerful colour effect, are naive but extremely felicitous derivations from more sumptuous town houses, and from castles built in the Czech Renaissance style of the



Farmhouse at Roskopr.

sixteenth century. The rhythmically varied arrangement of the weatherboarding in the gables, and the carved rafters and ledges produce a lovely interplay of light



Farmhouse at Oite.

and shade, while the plaster-framing of the windows and doors, together with the horizontal white strips between the baulks, which are blackened with age, are reminiscent of the sgraffito contrast of dark and light in the towns.

Very different is the appeal of the stone houses of villages and farms, a Baroque appeal, one is inclined to say, with the crowded or broken gables and their lavish stucco decoration. Yet the actual dates of these houses are much later than their appearance indicates. They are in this a striking illustration of the Marxian axiom that fundamental changes in the conception and form of the arts always point to fundamental changes in the position of the classes which have produced them. The social and political struggles of the peasant classes in Bohemia had been going on for centuries; their ending is marked by three important dates: 1781, the abolition of serfdom, 1789, the fiscal patent, and 1878, the abolition of compulsory labour on the domain of the feudal lord. Only after these three reforms did the rightless peasant at last become a respectable taxpayer and a prosperous and active participator in national life.

This change in the peasant's social position was so momentous that it necessarily found expression everywhere, and also in architecture. Plenty of new houses were put up, and they all seem to say: I am my own master and can live in houses just as stately as those of the town and country gentry, hence the impressive gateways leading into farms as into a manor. These arched gateways form part of a massive wall which in one line connects the living house with the granary. Sometimes, behind these impressive walls and façades the old wooden buildings remained intact, merely masked by clay and plaster decoration.

The decoration is clearly derived from the seventeenth and eighteenth centuries, a period which covered the Bohemian countryside with a glorious abundance of architectural monuments of all kinds. The country masons, bricklayers, carpenters and blacksmiths, working for the aristocracy and the clergy, could not fail to acquire an idea of the motifs of the Baroque, but often remained quite happily ignorant of their functional and social meaning. However, where the village craftsman seems always perfectly at ease is in the picturesque placing of, and the fanciful playing with, his motifs.

The names of most of the masons are unknown, but some chose to put their names just below the apex of a gable, where in most cases we find the date of the house and sometimes the name of the owner, unless precedence was given to the favourite religious symbol of the Trinity,



1, A typical Czech walled farm in the Sobeslavsko district of Southern Bohemia with arched gateway in the wall which joins house and granary.



2



3

2, the village common and duck-pond around which most villages are grouped. 3, a group of farmhouses in the village of Zahuzi with a small chapel showing late baroque influence in the foreground. 4, Svinkach. Traditionally the Czech village has but one entrance and exit.



4



5

*These elaborate stucco decorations, 5, at Komarov reflect the change in the countryman's status from that of a serf to peasant proprietor. He proclaims his new freedom by decorating the farmhouse, which is now his own, with ornaments which formerly were to be seen only on the houses of the gentry.*

6

7



*A Bohemian farm is generally rectangular in plan and consists of three buildings, connected by a wall: the house, the granary and stove, and the stables. In the centre is the courtyard.*

8



9

## Czech villages



8, a former smithy standing on the edge of a common in the centre of the village of Hluboke. 9, inside a Bohemian farm courtyard, looking towards the main gate. Farmhouse at Vlastibori, 10; note the unusual combination with, on the left, arches supported on corbels below the eaves and, on the right, a fan pattern with paterae below all enclosed by an arch.

10



11



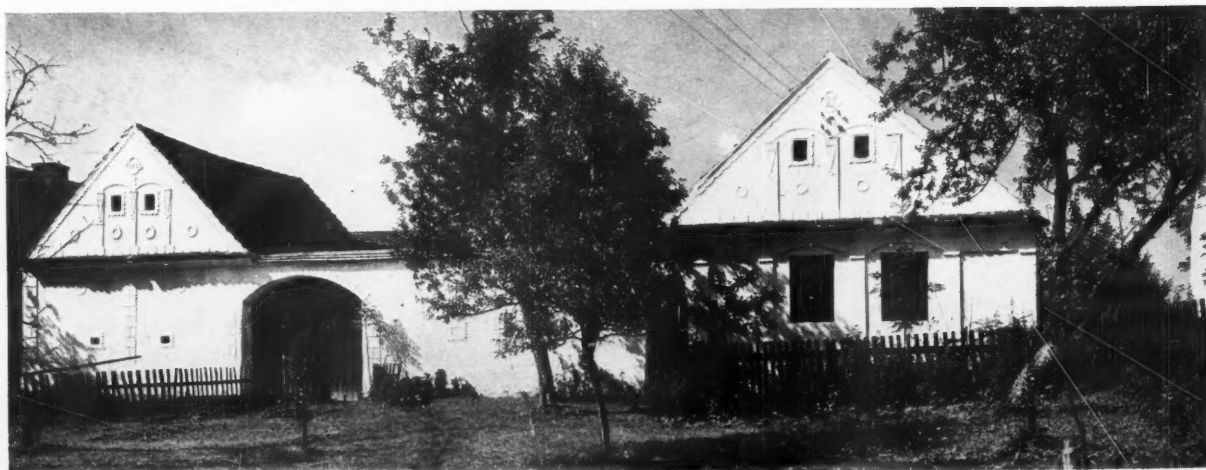
### Czech villages

*The decorations on the gables at Nedvedice, 11, are based on wood, and those on the arches on stone. A tendency towards symmetry appears in the decorated gables of 12 and 13, two farm-*



12

*houses built in 1888. The use of dark paint on the farmhouse at Komarov, 12, is unusual. 13, at Zaluzi, is more severe though the coupled arches in the gables follow the usual pattern.*



13

the 'divine eye' within a triangle.

While the timber farms remain single chords in the architectural and natural symphony of the countryside, these walled-in farms are more like complete phrases. Grouped round village greens or along village high streets, they convey a sense of quiet dignity and pleasantly varied uniformity.

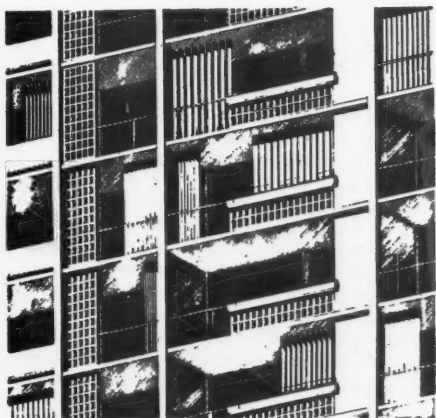
J. Sanda and M. Weatherall

## WORLD

### TOULON HARBOUR

*The destruction of the buildings along the quayside of Toulon Harbour at the end of the war has made possible the complete replanning of the harbour area through which passes the main Marseille-Nice highway.* Four large blocks of flats are now being built along the quayside and behind them will run a new boulevard carrying the main through-traffic. The new blocks are sited in such a way as not to close the view of the sea from the centre of the town. A similar vista will be opened from the municipal theatre. A site is being left at the west end of the quay for a municipal reception building.

The four blocks of flats are of different lengths, but are all six storeys high with an attic storey above. The ground floor consists partly of shops and cafés and partly of courtyards which keep open the view to the sea. Flats contain two, three, four or five rooms, each flat having its own balcony overlooking the sea. The structural frame of the blocks is reinforced concrete which is left revealed and fillings are of prefabricated concrete panels. Interior walls are of brick, plaster and standard panels. Floors are concrete, stair-wells glazed. All service ducts are concealed behind false ceilings. Roofs are finished with red Italian tiles. Balconies (below)



facing the sun have a deep set-back. The architect is Jean de Mailly.

In addition the area east of the Port Marchand, see plan below, has been replanned by the architect Mikélian. The new blocks under construction, shown in the perspectives, lie north-west of the Port Marchand.

L'Architecture d'Aujourd'hui, Oct.—Nov. 1950



## BOOKS

### BEYOND THE RIVER

**SURVEY OF LONDON: BANKSIDE.** Volume XXII. Edited by Sir Howard Roberts and Walter H. Godfrey. Published by the London County Council. 30s.

It looks as if the Survey of London is gathering speed. Volume XXI came out in May, 1949, Volume XXII in March, 1950. So perhaps—who knows—the survey may after all be complete by the year 2150. This is not meant to be facetious. If any criticism of the tempo of publication is called for, it must be directed against those official bodies which do not see the importance of such a survey and keep it deplorably underfinanced, that is understaffed. In the case of the most recent volume, for instance, it is obvious that Miss Darlington's work was extensive, laborious and not always rewarding. No one research worker could obviously do more in the time than she has done. She should have had more time, or rather the work should have been done by six people instead of one. If that had been the case

it might have been achieved with twice as much detail and taken one third of the time.

The volume seems not at first very promising. The two parishes of St. Saviour and Christchurch, Southwark, have little of architectural merit that one would remember, except for St. Saviour's itself, that is Southwark Cathedral, and this has for all intents and purposes been left out. I say for all intents and purposes, because oddly enough two pages are devoted to it and four illustrations. It will one day obviously have to have a volume to itself, especially as its building history is by no means sufficiently clear. To the general reader the chief interest of the district will be Bankside and the playhouses, and a recently discovered map which finally settles the exact site of the Globe. It is for the general reader undoubtedly a great advantage of the Survey over the Royal Commission volumes that the Survey includes information on, and illustrations of, buildings no longer in existence. Thus for instance Winchester House has a chapter to itself, although there is nothing of it visible at all nowadays, the spectacular fourteenth century rose window surviving only damaged and hidden in a warehouse. Another advantage of the Survey is that it combines pleasantly readable pages with the necessary merely inventorizing architectural descriptions. The Royal Commission has little that could tempt anybody to settle down with one of its books for an hour's quiet reading. Moreover, the Royal Commission used to include only buildings prior to 1714. It now goes as far as 1800, whereas the Survey has always gone to 1800 and sometimes a little beyond. Now one finds, to one's pleasurable horror, that the Hop Exchange of 1864-66 and numbers 24 to 26, St. Thomas Street of 1863 are included even if not illustrated. Surely, so comprehensive a Survey must deal with the nineteenth century as accurately as with the seventeenth century or eighteenth, especially in a region with so much Victorian architectural activity. There is for instance Edis's building numbers 91-93, Southwark Street and Roger Smith's number 99, Southwark Street. And who designed Calvert's Buildings opposite the Hop Exchange? Numbers 24-26, St. Thomas Street incidentally are by Newman and Billing.

The volume with its 92 plates is good value for the money. But why are the plates scattered through the text instead of being assembled together at the end as was done in previous volumes and should be done by any reasonable publisher and editor?

N. Pevsner

## THE SCIENCE OF COLOUR

WHAT IS COLOUR? By Michael Wilson, Goethean Science Foundation. Clent, Stourbridge, Worcestershire. 1949. 2s. 6d.

ORDNUNG UND HARMONIE DER FARBEN. By Paul Renner. Otto Maier Verlag, Ravensburg. 1947.

As a profession we tend to read and write a lot about the importance of proportions in design, and very little about the importance of colour. It is bound to be like that, because we are trained by drawing-board methods. It does not even seem as if we are using our critical

faculties to any extent where the teaching of colour theory is concerned. The accepted 'harmonies' of the Ostwald colour circle are rather terrible, really, and they convince only the mind, not the eye. Ostwald's theory is an intellectual masterpiece, no doubt, but in the matter of colour it is only appearance, not optical facts, that count—appearance that acts through the eyes on our emotions: a very difficult subject for the pure scientist.

About the time of Goethe's bicentenary Michael Wilson staged a small exhibition in the Rudolf Steiner Hall in London, which contained a number of experiments on the way in which the eye reacts and indeed produces pure colour. His small book describes these experiments, and draws some conclusions. Goethean methods are not like orthodox scientific methods. Goethe asks different types of questions and gets different answers. He looks around himself to discover what is common in the transient manifestations of pure colour, the sky, the sea, the rainbow, the setting sun, the prismatic fringes, the iridescence of a drop of oil or a dewdrop. He discovers that 'colours are the deeds and sufferings of light.' Look at light through a slightly obscured medium—look at the sun through the atmosphere—and you will see the whole range of colours that can be obtained by darkening the light—from the brilliant near-white of the sun in high altitudes, through yellow, orange, vermillion, to bright red.

Look at darkness through such a medium—the darkness of the outer space through the atmosphere—and you will get the range from black to violet, purple to true blue and finally to brilliant turquoise green. Pure green and magenta pink are seen in experiments where the two series of colours are produced as prismatic fringes of darkness and light. The Newtonian closed spectrum with which we are familiar shows neither the pure yellow nor the turquoise green. The colours of the Newtonian closed spectrum are not seen in nature at all, not even in the rainbow. They are, however, increasingly met with in electrical discharge lamps (mercury, sodium, neon).

Wilson's work is theoretical in as far as he deals with pure colour, not necessarily produced or produceable by pigments. From yellow, magenta and turquoise all other colours could theoretically be mixed, if only one could produce permanent pigments to represent the exact colour of the turquoise and magenta seen in sun and sky, coloured shadow and after image of the eye. But whether the complementary colour pairs of the Goethean colour circle can be produced on the colour chart or not—Wilson's book makes it possible to become fully conscious of their reality and of their complementary character.

Primed with the experience of one or two of Wilson's experiments, I read the new German book on colour harmony by Paul Renner. This is an eminently practical book, beautifully produced and illustrated with colour plates. Renner concerns himself with the possible ranges of colours. There is an introductory chapter on the science of colour. On the whole, with some modifications, Renner shares Wilson's view of Goethe's colour science. He refutes Ostwald as useless for an

artist, however useful his work might be to the maker of colours. But Renner's book becomes really fascinating when he writes as an artist, a sensitive colourist and a teacher. He evolves some nine maxims which are fundamental to the harmonious grouping of colours. He shows their working in colour plates, and finishes with a most instructive method of expressing the colours of some natural thing, such as a bird's plumage or the evening sky or a patch of heather. He has managed to get his publisher's co-operation in producing the book itself with such care that the printer's ink and the tone of the paper harmonize beautifully. The type and the setting, too, are a pleasure to see.

Gerhard Rosenberg

## Shorter Notices

CANALETTO. By F. J. B. Watson. Paul Elek. 42s.

This is the first volume of a new series to be published under the general title of 'Master Painters.' A carefully produced folio (with a very elegant title-page), it consists of a Note on Canaletto by Mr. Watson, impressively documented; a Short Bibliography (fifty-five items); Notes on the Illustrations; thirty-four illustrations in black and white; and fourteen coloured plates, each mounted on stiff cartridge paper, with the captions conveniently printed on the mount beneath the plate.

The coloured reproductions, in half-tone, were printed by Hunt, Barnard and Co. of Aylesbury, and Balding and Mansell of Wisbech. Most of them have been successfully brought off—particularly *The Islands of S. Cristoforo della Pace and S. Michele* and *The Stonemason's Yard* (both early works) and the lovely Dulwich version of *Walton Bridge*. Others, such as the Duke of Richmond's *View of the Thames from the Gardens of Somerset House*, are a little pallid and lacking in definition. The black and whites include a number of agreeably unfamiliar subjects; but it seems a pity that of nearly fifty illustrations all but five should have had to be drawn from English galleries and collections. Nevertheless, the selection is judicious and Mr. Watson's introduction and notes are pithy as well as learned.

J.W.C.

PERSPEKTIVE FÜR ARCHITEKTEN. By Professor W. Schütte. Gerold & Co., Vienna. ö.S.28.

After warning of the pitfalls into which a too ready knowledge of free-hand drawing can lead the unwary architectural draughtsman, Professor Schütte asks what a perspective can be expected to show. He answers this question mainly with a simple but comprehensive series of drawings, introducing the different technical aspects as he runs through. The remainder of the book consists of twenty-six examples of modern perspectives, many interesting in themselves, ranging in subject from room details to skyscraper cities. No neo-Georgians, no ministerial Baroque, but Le Corbusier, Frank Lloyd Wright, Garnier, Meyer, Fisker, Holford, Casson; and including two *Westminster Regained* drawings by Gordon Cullen from the REVIEW. The clear, simple presentation makes this a useful text-book even without translation.

G.B.

# In Praise of Pleasure Gardens

Nor in contending for a just estimation and moderate use of the usual modes of amusement, do we effect any blindness to the evils of which the idle and wicked have made them the occasion; but knowing that mankind must and will have places and periods of relaxation, it is far more worthy of the real Christian philanthropist to try and keep them around than to get rid of them altogether especially as it is a fact directly corroborative of this argument, and one which no Utopian theory can overthrow, that, in those towns where no public amusements have been permitted or provided, public morals have been at a lower ebb than in any other.

*The Lady of the Manor. Being a Series of Conversations on the Subject of Conversation intended for the Use of the Middle and Higher Ranks of Young Females by Mrs. Sherwood. 7 volumes. London, 1842.*

Every night constantly I go to Ranelagh; which has totally beat Vauxhall. Nobody goes anywhere else—everybody goes there. My Lord Chesterfield is so fond of it, that he says he has ordered all his letters to be directed thither. If you had never seen it, I would make you a most pompous description of it, and tell you how the floor is all of beaten princes—that you can't set your foot without treading on a Prince of Wales or Duke of Cumberland. The company is universal: there is from his Grace of Grafton down to children out of the Foundling Hospital—from my Lady Townshend to the kitten—from my Lord Sandys to your humble cousin and his friend, Hor. Walpole.

*Walpole to Hon. Henry Seymour Conway, 1744. Toynbee II, p. 319.*

Ranelagh looks like the enchanted palace of a genius, adorned with the most exquisite performances of painting, carving, and gilding, enlightened with a thousand golden lamps, that emulate the noon-day sun; crowded with the great, the rich, the gay, the happy, and the fair; glittering with cloth of gold and silver, lace, embroidery, and precious stones. . . . There I heard the famous Tenducci, a thing from Italy; it looks for all the world like a man, though they say it is not. The voice to be sure is neither man's nor woman's; but it is more melodious than either; and it warbled so divinely, that, while I listened, I really thought myself in paradise. . . .

At nine o'clock, in a charming moon-light evening, we embarked at Ranelagh for Vauxhall, in a wherry, so light and slender, that we looked like so many fairies sailing in a nut-shell. . . . Image to yourself, my dear Letty, a spacious garden, part laid out in delightful walks, bounded with high hedges and trees, and paved with gravel; . . . the whole illuminated with an infinite number of lamps, disposed in different figures of suns, stars, and constellations. . . . Among the vocal performers, I had the happiness to hear the celebrated Mrs. —, whose voice was so loud and so shrill, that it made my head ache through excess of pleasure.

*Humphry Clinker, 1797; The Works of Tobias Smollett, Vol. VII, p. 126.*

. . . 'Some people . . . are a little stuffy about parks. I am all for there being adequate park provision for quietness, leisure, rest, recreation and sport.

But we ought to include other things in our parks. A little fun and games in some of them will not really do us any harm. After all, there were Vauxhall Gardens years ago. I am not proposing to make the Festival Gardens exactly like Vauxhall Gardens. But if we take the continental use of parks, in a great many of them there is happiness and good cheer without vulgarity and excessive noise. I suggest that the partial use of some of our parks for that purpose . . .

That is my approach. In short, I am the friend of everybody—that is my business. I am the friend of people who want to be quiet and reflective, with peace and culture and all the rest of it; and equally I am the friend of the costermongers and hobbledahoys who go to Hampstead Heath on a Bank Holiday and kick up an awful row, but have a good time and are happy in their own way.'

*The Rt. Honourable Herbert Morrison, Lord President, at the second reading of the Festival of Britain Bill, November 23, 1949, Hansard, Vol. 470, p. 450.*

## Acknowledgment

The colour reproductions of the Travel Centre in Piccadilly which appeared in the February issue of the REVIEW were made available through the courtesy of Messrs. Holland, Hannen and Cubitts, the general contractors for the job.

## Towards a Transport Museum

The committee set up by the British Transport Commission to consider the preservation of the relics and records in the Commission's possession have now reported their findings and their report has been published.\* The subject of their deliberations, being nothing less than the whole historical past of British railways, canals and road transport, in so far as it exists in tangible form, is one of the greatest importance,



1, the front of Nine Elms Station, the original London terminus of the London and Southampton Railway built in 1838 and designed by Sir William Tite. Here the new Transport Museum is to be housed.

and one which in view of the risks as well as the opportunities inherent in nationalization was certainly in need of urgent attention. Thus it is extremely gratifying to be able to say that the report is an altogether admirable document; the Committee, consisting of S. B. Taylor (Deputy Secretary of the British Transport Commission), Christian Barman (its Publicity Officer), and representatives of the five Executives, are to be heartily congratulated on it.



2, the Shareholders' Meeting Room, Euston, where smaller relics are to be on exhibition temporarily.

The report begins by drawing the necessary distinction between records—minute books, early correspondence and so on—and relics—comprising everything from tickets to locomotives and from specimens of permanent way to station buildings. The preservation of

\* British Transport Commission. 1s. 6d.

transport records does not present any special difficulties: it is with reference to the other category—relics—that the committee have the most interesting suggestions to make. One of those most to be welcomed is the scheduling of notable buildings and structures belonging to the Transport Commission on the lines of the lists of buildings of special architectural or historical interest drawn up for the Ministry of Town and Country Planning, and the formation of a special collection of information about such buildings and structures. But the boldest proposals concern the preservation of movable relics. There is already a Railway Museum at York, and the committee propose that this should remain but should be devoted to railway exhibits from the North of England; similarly, the Scottish collection of small railway relics should remain, to be enlarged and eventually opened as the British Transport Museum, Edinburgh. This still leaves London without a transport museum—a deficiency which the committee suggest should be remedied in two stages. To begin with, the smaller relics collected by the Great Western, London Midland and Scottish and Southern Railway Companies—the LNER relics are already at York—by the London Passenger Transport Board and by the canal and road transport companies, should be exhibited in the highly appropriate surroundings of the shareholders' meeting-room at Euston, 'an imposing room with notable transport associations'; if necessary, the collection could overflow on to the ground floor of the Hotel Great Central in Marylebone Road, where three of the Executives have their headquarters. At the second stage, the committee envisage the installation of the collection in its own separate building. 'Bearing in mind the existence in this country of a number of early rail-

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It is good news indeed that the British Transport Commission, as stated by its chairman in a foreword to the report, has already accepted in principle its committee's recommendations. May they be implemented with all possible speed! And as a first step towards that desirable end, could not the Commission hold a competition for designs for the display of the exhibits at Euston? It is a subject which would be sure to interest many of the best exhibition designers at the present time.

#### 'The Builder' Low Cost Housing Competition

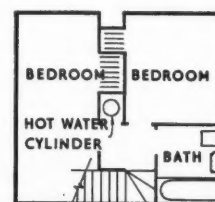
Few of the entrants in *The Builder* competition, the results of which were exhibited at County Hall, London, during the last week of February, tried to reduce cost by using unconventional building materials or methods, and the constructional design of the winning entry was entirely conventional. In order to

keep within the £1,000 limit most competitors, besides cutting floor area, cut thermal and sound insulation standards, cupboard space and equipment generally. For example, all the winning entries had sacrificed the cavity party wall.

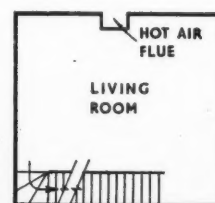
The results did show, however, that by skilful planning it is possible to reduce the floor area of a house by 20 to 25 per cent., and yet design a comfortable home for the average family of four or five, although this does not represent anything like a proportional saving in cost.

Most entrants used traditional roofs, though a few introduced innovations. The flat roof can, of course, be a cheap method of construction for the architect who will brave its unpopularity, but the cheaper flat roof coverings require periodical maintenance which is not always an acceptable condition. A few architects used a steeply-pitched roof and tried to fit the first-floor rooms into it. Few were successful. However, one design of this type was ingenious. It avoids the use of dormers, except for one over the staircase, and the roof is carried down over a small outhouse.

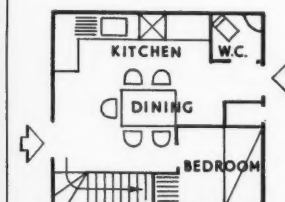
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SECOND FLOOR



FIRST FLOOR



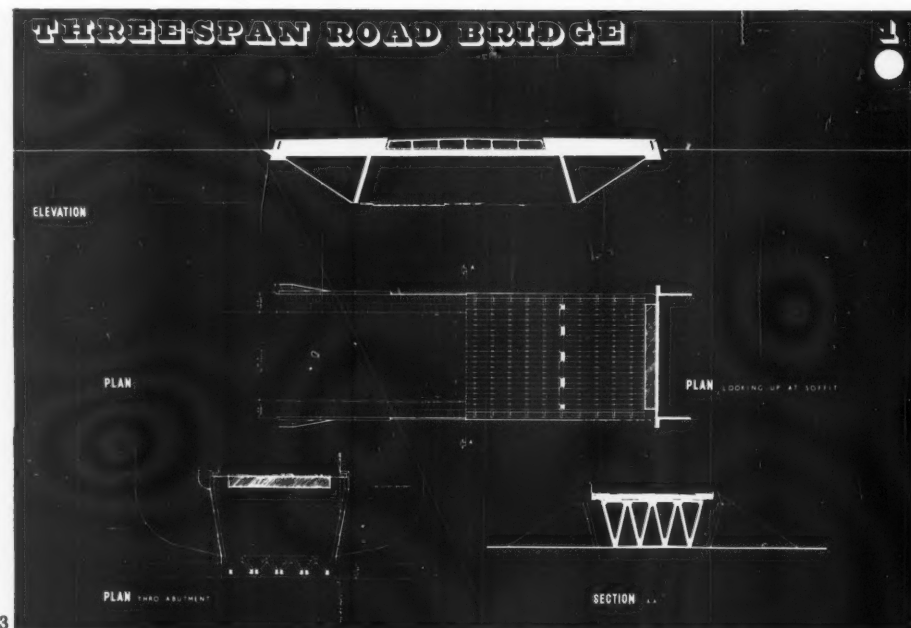
GROUND FLOOR

4

storeys. The first floor, which contains nothing but a living room, has attraction.

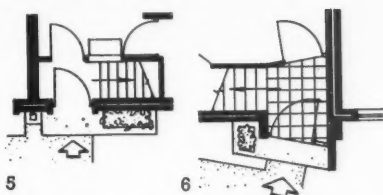
One of the most interesting features found on many of the plans is a large store or utility room situated at the front of the house, intended for bicycles, pram, fuel and dustbin and to serve as a small workshop.

The first winning design has the utility room at the rear, but no access passage. Although this house has four entrances, all sources of draught and heat loss, dustbins are kept in a little brick box at the front of the house and coal deliveries must pass through the kitchen! Another fault which this design has, in common with several others, is that the entrance 'lobby'

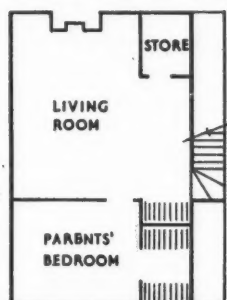


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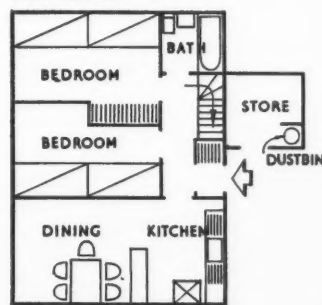
## MARGINALIA



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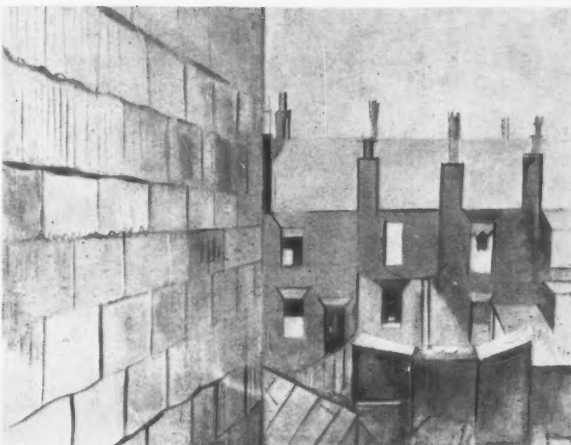
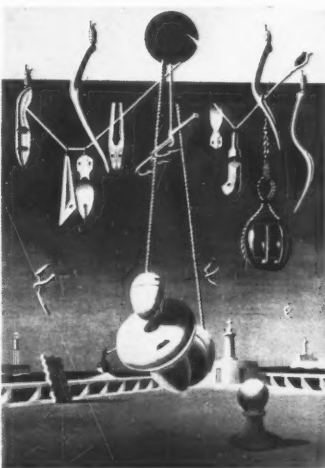
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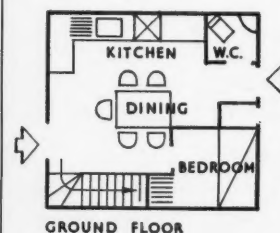
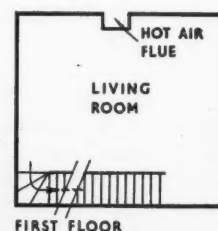
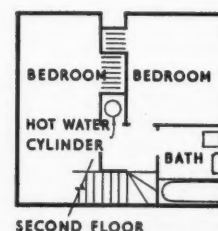
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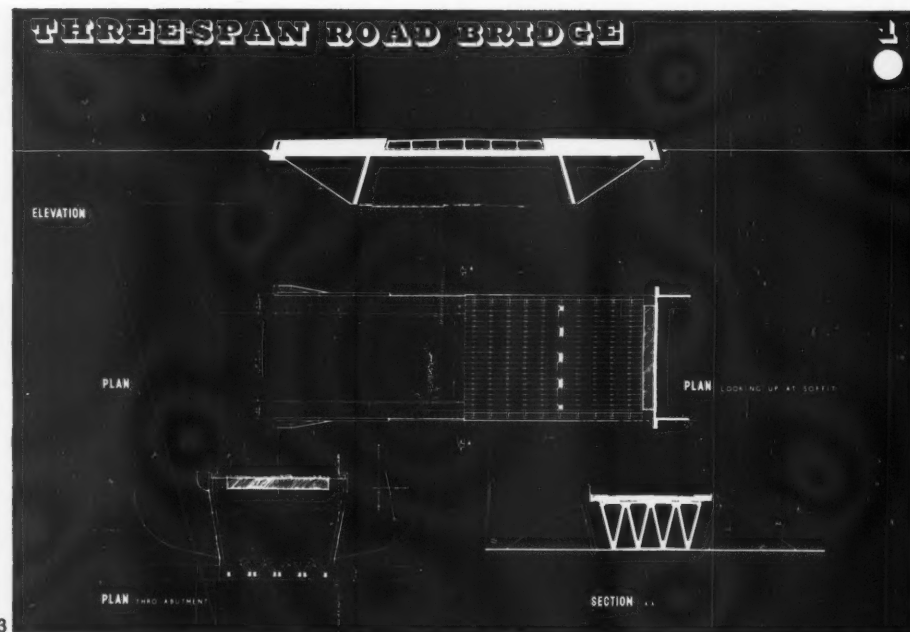
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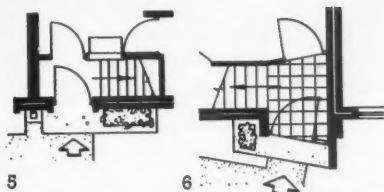
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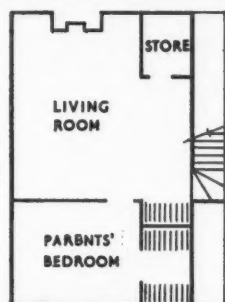


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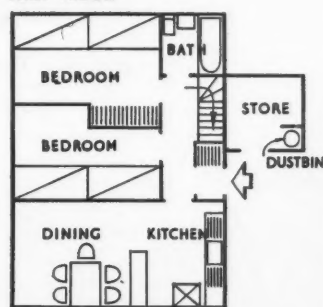
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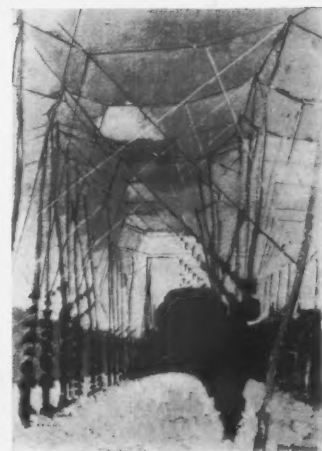
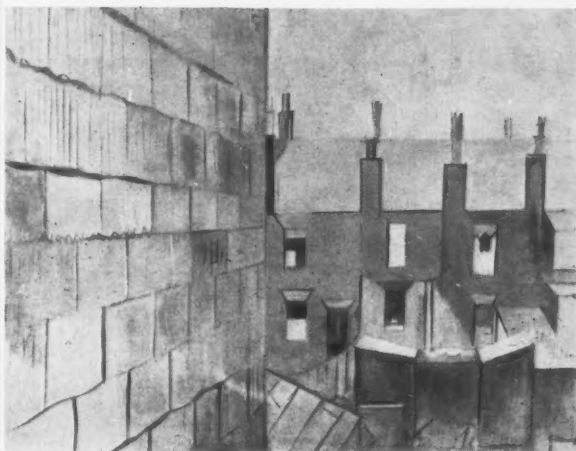
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which stand out from the rest by reason of that inner consistency—either of form or mood—which distinguishes the work of the artist who has found himself from that of the student and the picture-maker, and then to ignore the rest for the remainder of one's visit. Here are a few of the numbers which got on to the back of one spectator's catalogue: 45, *Hop Alley*, by William Townsend (a carefully planned piece, in which the stringing of the hop-poles both creates a pattern and helps to realize space); 134, *Partridge Harbour*, by Raymond Coxon (*Gordale Scar* with a difference); 138, *Study for East Coast Painting*, by Ivon Hitchens (actually a seated nude); 162, *Amphytrion*, by Kit Lewis (purchased by the Arts Council, sensibly enough); 172 and 177, *Black Bars and Black Forms*, by Robert Adams (the sculptor, who here turns out to be a really good abstract painter as well); 181, *Sunlight*, by Ceri Richards (almost as big as a piano, but not containing any this time); 235, *Three Jolly Girls on a Balcony*, by Edward Ardizzone (whose drawings it is always an unalloyed pleasure to come on anywhere); 148, *Securities*, and 291, *The Shock of Eternities*, by Denis Williams (neither absolutely his best, but by no means to be ignored); 297, *Black and White Form*, by William Gear (which deserved better luck in its hanging); 324, *Miss Edney*, by Roger de Grey (interior with figure by one of the most workmanlike of the younger painters). There were no real surprises by way of sculpture, though Adams's one carving, *Dancer*, stood out from the rest.

# 1851 Centenary Pavilion

To try to capture something of the spirit of the 1851 Crystal Palace in miniature, a pavilion has been designed by Hugh Casson and James Gardner for the 1951 Festival. It will be the only token on the South Bank site commemorating the present Festival as the centenary of the 1851 Exhibition. The interior of this pavilion is given up to two model displays: the first an accurate scale model of the original Crystal Palace; the second a display with accurately modelled figures of the opening ceremony of 1851 showing Queen Victoria and her entourage. There are also two revolving dioramic displays of interior and exterior

views of the Crystal Palace on its original Hyde Park site, and a sound recording which includes spoken extracts from Queen Victoria's opening speech. The pavilion is constructed from mild steel angles, flats and tees. Columns are of steel tubes, drawn first as round tubes and then formed to hexagon shape. Bases and capitals on columns are of sheet metal, bronzed in position. The whole structure is fabricated in four bays linked by spans, arc-welding being the general method of jointing. The guard rail is of extruded aluminium and the external balustrade is canvas backed. End panels and curtains are of fibrous plaster.

## CORRESPONDENCE

### Man Made America

To the Editors,

#### THE ARCHITECTURAL REVIEW

DEAR SIRs,—You have done an outstanding job with 'Made Made America.' I am serving as Secretary of the Society of Contemporary Designers, a group which is very much concerned with the problems which you have examined in such a perceptive and visually exciting manner. I propose to make this special issue the subject of one of our next meetings.

Yours, etc.,

Los Angeles.

JOHN MAASS.

To the Editors,

#### THE ARCHITECTURAL REVIEW

DEAR SIRs,—In a copy of the American magazine, *Time*, I have seen quotations from an article published by you, on conditions in the United States and the general scene there.

Lamentably enough, no objectively-thinking and sober-minded American can deny the accuracy of your portrait, however much it may be assailed by such products of the American materialistic economy and defenders of it as the aforesaid periodical. Probably never in American history has crude, selfish materialism been so dominant or spiritual and cultural values so deeply submerged in it.

As an American foreign correspondent I find it sad to be compelled to make the above admissions, but they are inescapable.

Yours, etc.,

London.

MARC T. GREENE.

To the Editors,

#### THE ARCHITECTURAL REVIEW

DEAR SIRs,—Just a note to congratulate you on your 'Man Made America' issue; a brave bite at a large subject.

I should like to formulate some more detailed comments with a little more time, but this certainly represents a beginning of the right kind of thinking. The main fuzziness seems to be on the part of some of our own contributors who are thoroughly lost in the clouds.

Yours, etc.,

Los Angeles.

GARRETT ECKBO.

To the Editors,

#### THE ARCHITECTURAL REVIEW

DEAR SIRs,—Bravo! 'Man Made America' was a fine issue of an excellent magazine. I think you are to be congratulated for your consistently high level of critical insight.

The arrival of my December issue of *THE ARCHITECTURAL REVIEW* coincided with the arrival of the January 27, 1951, issue of *The New Yorker*. The arrivals were noted as coincidental because both magazines made use of 'indictments' by Saul Steinberg, with the result that the one reinforced the other very forcefully.

You may be assured of my continued interest in *THE ARCHITECTURAL REVIEW*.

Yours, etc.,

Roanoke, Virginia.

J. M. YEATTS.

## TRADE & INDUSTRY

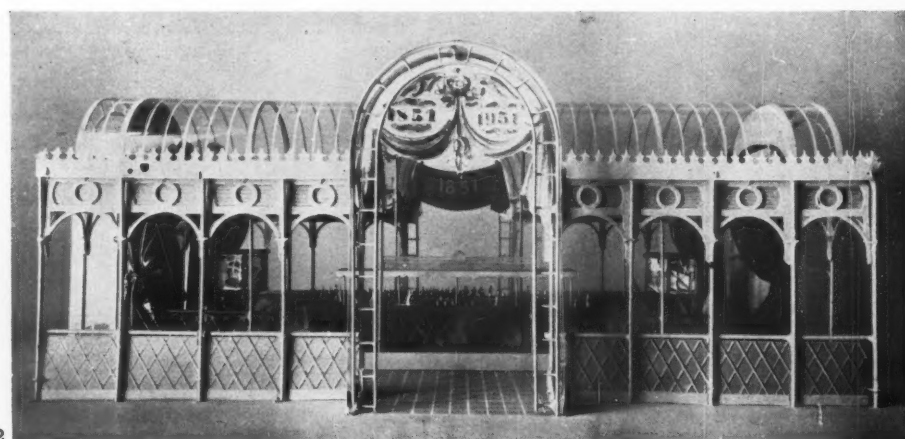
### High Temperature Panel Heater

Heating appliances have tended to remain 'floor-bound' as it were, usually for good technical reasons dependent on the heating method. Electricity, in the form of fire or radiator, is by nature more flexible in its application than a coal-fire, and there are numerous occasions when this flexibility can be used to advantage.

The *Thermovent* panel heater is intended for mounting either in an upright or horizontal position on a wall at a height of 8–9 feet, and at an angle that can vary between the vertical and 40 degrees, but preferably is about 30 degrees. It can, of course, be mounted at a lower level if protected by a suitable guard. The heater is in fact a radiator, since it emits radiant heat, and this over a considerable area, depending on the height and the method of fixing it. The radiator is not affected by rapid air changes and is therefore very suitable for situations where this occurs, such as under excessive glass areas, open or semi-open buildings or temporary buildings. Radiation is evenly distributed over the whole of the face of the front plate by means of its unusual multi-element cellular construction. This radiating surface is made up of a number of cells or channels, each of which carries a robust low-temperature element. These elements are interconnected by busbars to common mains wiring terminals, so should any replacement of elements be necessary, the operation is quite simple.

The back tray of the radiator is well insulated and ensures that the front plate operates at approximately 90 per cent of the effective output. The radiating surface is finished in

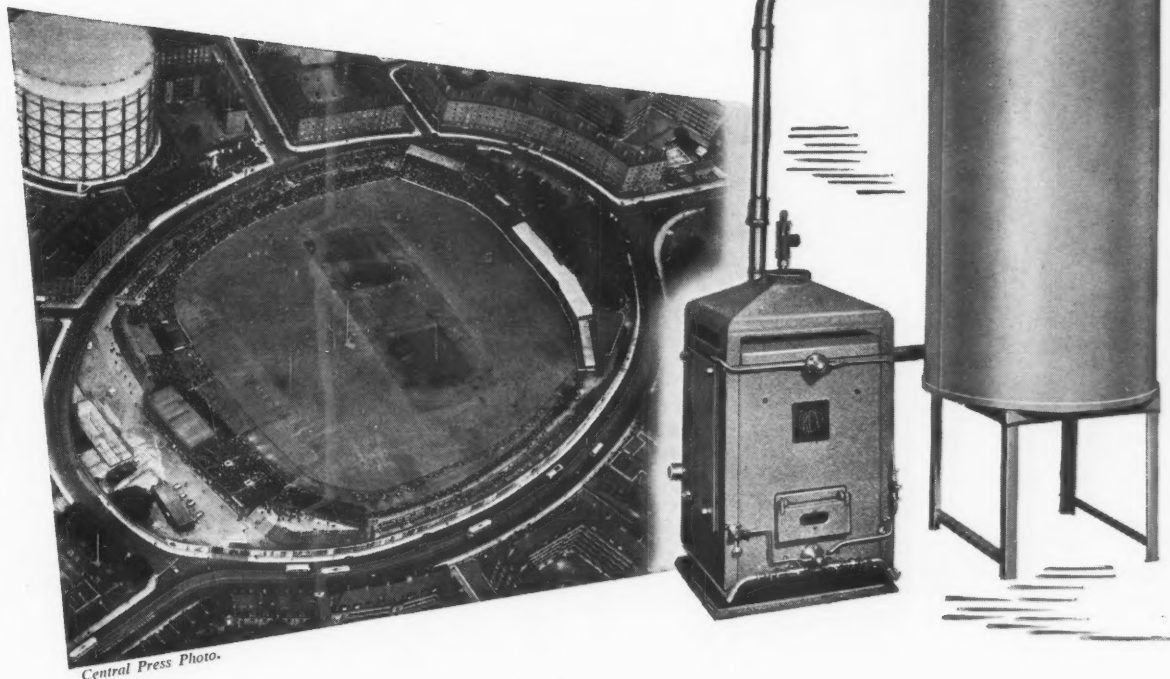
[continued on page 268]



A model of the pavilion commemorating the 1851 Exhibition which is to be built on the 1951 South Bank Exhibition site. (See note 1851 Centenary Pavilion on this page.)

Recommendation for specification

**"MADE BY DE LA RUE"**



**Potterton Boilers at The Oval** In the changing rooms at the Oval are

installed two special POTTERTON Gas Fired Lagged Storage Sets, supplying hot water to the slipper baths, shower baths and hand basins. The boilers are fully automatic in operation and are fitted with PERFECTA Thermostats and Control Valves.

POTTERTON Gas Fired Boilers for hot water supply are available for both hard and soft water districts, in capacities ranging from 28 to 247 gallons per hour with a temperature rise of 80°F. For

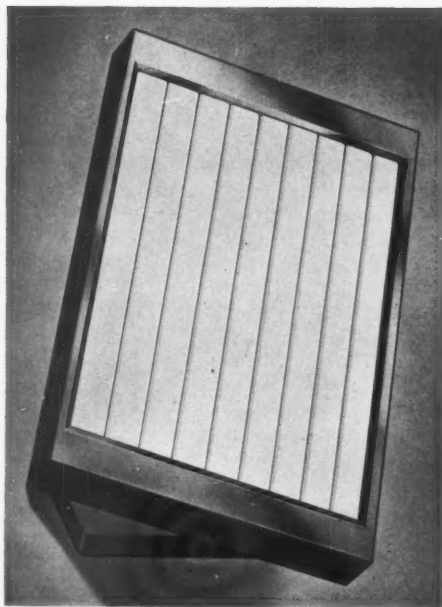
central heating there is a wide range available with rated outputs of 20,000 to 1,250,000

B.Th.U.'s per hour. May we send you literature ?

## **POTTERTON GAS FIRED BOILERS**

**THOMAS DE LA RUE & CO. LTD. (Potterton Gas Division),**  
Imperial House, 84-86, Regent Street, London, W.1.  
Northern Area: 4, Albert Square, Manchester 2.  
Midlands Area: Portobello Works, Warwick.

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*The new Thermovent panel heater for wall mounting.*

cream vitreous enamel, and the casing is bright cadmium plated steel. The fixing hooks are adjustable to horizontal or vertical positions or, alternatively, suspension hooks can be supplied.

The overall size is 24 inches by 15 inches, standard loading is 1,500 watts, and the voltage range is 220/250 volts AC or DC. A 1 kW model can be supplied to special order, and

likewise voltages of 100/120 or 200/220 are obtainable.

E. K. Cole Ltd., Southend-on-Sea, Essex.

#### Trough Valley Tiles

With the prospect of rearmament priorities reducing the availability of the non-ferrous metals, and the harsh realities apparent in their present price curves, an alternative for any specific job must inevitably be welcome.

The Marley Tile Company has recently marketed a trough valley tile which should fall neatly into this category quite apart from other advantages to which the manufacturers can point. This tile is expressly offered as an alternative to metal, both on the score of cost and appearance. It is made in the form of a trough and the outer edge has a raised rib, which acts in the same way as the welt or tilting fillet in a metal valley, containing any water that may percolate through the bedding by capillary action. Thus these ribs are, in practice, the sides of a channel. The tiles can be used with any form of tiling or slating, provided the groundwork on which the actual roofing is laid is properly prepared.

The Company has produced a small technical booklet, illustrated with diagrams, describing seven different ways in which this groundwork can be carried out, together with instructions for using the tile.

The Marley Tile Co., Ltd., Riverhead, Sevenoaks, Kent.

#### Submersible Floodlights

The interplay of light with water has always been a wonderful medium for display, and the

electric lamp opened up many new and obvious applications which have never been fully exploited.

An underwater floodlight has been produced by GEC for use at the Festival of Britain South Bank Exhibition, for illuminating fountains, and this leeway (in exploitation) should in some measure be made up.

The floodlight, which is 12 inches high by 8 inches in diameter, consists of an external cylinder. This is closed at the top by a sheet of  $\frac{3}{8}$  inch armour plate glass, inside which is fitted a second cylinder, closed at the bottom. This inner cylinder forms the lamp chamber, from which water is excluded by the pressure of the air trapped under the top cover when the floodlight is placed under water. The metal box housing the connector is sealed to prevent air from the inside escaping along the cable.

A 150-watt spotlight reflector lamp with an internally silvered bulb is used in the floodlight, and is held at an angle so that the beam is about 15 degrees from the vertical.

Since there is no watertight joint to break and reseal, lamp replacement is a simple operation.

The floodlights being compact, a number can be spaced round the jets of a fountain. Varied colour effects are possible with colour filters and the use of individual motor-driven dimmers.

General Electric Co. Ltd., Kingsway, London, W.C.2.

#### Glass on Show

At the Ideal Home Exhibition, Chance Brothers selected a very appropriate moment

[continued on page 270]

# SCIENTIFIC CENTRAL HEATING

by MOTOR STOKER

*thermostatically controlled  
and automatically fired,  
burning industrial grades  
of coal with economy.*



by OIL BURNER

*Complete automatic-  
control can be provided  
with either fuel. Send for  
illustrated literature.*

## BY HOPE'S

HOPE'S HEATING & ENGINEERING LTD., BIRMINGHAM, 40, & 17 BERNERS ST., LONDON, W.1  
SPECIALISTS IN INDUSTRIAL & DOMESTIC HEATING



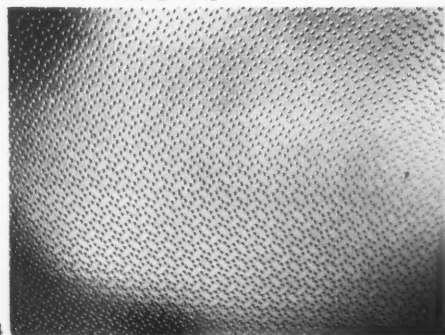
Messrs. Boots Ltd., Royal Exchange, Manchester.  
Architects: Bradshaw, Gass & Hope, F.F.R.I.B.A.  
Main Contractors: Dickinson (Bolton) Ltd.

*craftsmen in wood and metal  
store and shop planners*

GEORGE PARNALL  
AND COMPANY LTD.

4 BEDFORD SQUARE · LONDON · W · C · I

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14

The new Festival figured rolled glass specially designed by Chance Bros. in co-operation with CID to mark the occasion of the Festival of Britain. The pattern is based on the crystal structure of apophyllite—see *The Investigation of Crystal Structure*, page 236.

to remind us that they made all the glass for the Great Exhibition building of 1851—the Crystal Palace which took almost a million square feet of glass.

Their stand was a replica of this one-time London landmark. Here they exhibited new designs of tableware, including their 'Fiesta,' shown for the first time in this country.

In addition there was displayed lighthouse optics (they exhibited in 1851 the first British lighthouse apparatus), scientific glass, cathode ray tubes, glass for eye protection in industrial processes (they carried out the first experiments for Sir William Crookes), building glass and glass for a multitude of other special uses.

Chance Brothers Ltd., St. James's Square, London, W.1.

#### Booklets Received

**APCM 1900-1950.** With this booklet the Associated Portland Cement Manufacturers mark the completion of fifty years' effort in the production of cement. This is an illustrated account of how the largest cement organization in the world has developed, during a period when the total production of the industry has increased from 2,000,000 tons to 9,672,000.

Associated Portland Cement Manufacturers Ltd., Tothill Street, London, S.W.1.

**GEC Festive Lighting** is an illustrated catalogue of the fittings produced by this firm for outdoor and indoor decorative lighting.

The General Electric Co. Ltd., Kingsway, London, W.C.2.

#### CONTRACTORS etc

**House at Highgate.** General contractors: Leslie Bilsby Ltd. Sub-contractors: Bituminous roofing: William Briggs & Sons. Electrical contractors: Troughton & Young (Lighting) Ltd. Joinery: Linden Doors Ltd. Pitch mastic flooring: Permanite Ltd. Carda windows: Holcon Ltd. Cork flooring: Armstrong Cork Co. Hot water and heating: Richard J. Audrey Ltd. Nominated suppliers: Roof decking: Stramit Boards Ltd. Ironmongery: Rennis Ltd. Bricks (Stocks): Cement Marketing Co. Tyrolean finish: Cement Marketing Co. Sanitary fittings: Stitsons Sanitary Fittings Ltd. Furnishings and fittings: O. Peterson Ltd.; Merchant Adventurers Ltd.; Alfred Goslett & Co.; Electrolux Ltd.; Early-mill Boiler Co.

**Festival Pleasure Gardens, Battersea Park.** General contractors: Dowsett Engineering Construction. Sub-contractors: Electrical: Drake & Gorham Ltd.; Barlow & Young Ltd. Special lighting effects to theatres, grotto and fountains: Strand Electric & Engineering Co. Plumbing: Arthur Scull & Son. Site works: Willment Bros. The pier: Richard Costain Ltd. Scaffolding and welded scaffold structures: Security Scaffolds. Structural steelwork: Willard Engineering Co. Garden contractors: William Wood & Son. Plasterers: W. A. Telling Ltd. Fibrous plaster: Dejongs; Clark & Fenn Ltd.; Veronese Co. Canework: G. W. Scott & Sons. Prefabricated constructions in timber: Redifce Construction Co. Aluminium booth frames: Packaged Building (Robert Building Inventions Ltd.). Dutch barn booths: A. & J. Main & Co. Canvas tents: John Edgington & Co.; Piggott Bros. & Co. Fountains: Drysdale & Co. Bituminous felt roofing: Faldo Asphalte Co. Tarmac pavings: Hobart Paving Co. Fencing: Boulton & Paul Ltd. Gas services: North Thames Gas Board. High tension electricity supply: London Electricity Board. Sanitary fittings: Adamsez Ltd.; John Bolding & Sons. Bar fittings: Gaskell & Chambers Ltd. Glazing: Faulkner Greene & Co. Metal windows: Crittall Manufacturing Co. Festival clock and others: Baume & Co. Public address equipment: Electric & Musical Industries Ltd.

**Factory at Inchicore.** General contractors: G. T. Crampton Ltd. Sub-contractors: Asphalt: South of Ireland Asphalte Co. Bricks, chimney construction: J. Ramey & Co. Artificial stone and partition blocks: Creststone Ltd. Structural steel: Irvine Chapman & Co.; Universal Steel Door & Eng. Co.; Dublin Erection Co. Special roofing: Asbestos Cement Roofings Ltd. Roof insulation: Gypsum Industries Ltd. Glass: Pilkington Bros. Ltd. Patent glazing, window furniture: Williams & Williams Ltd. Linoleum

[continued on page 272]



## "A Milners job"

CONSTRUCTED with the superior workmanship that has made the Milners Safe Co. suppliers of protective equipment to the Bank of England, the Admiralty and War Office, and to Banks throughout the world, Milners Steel Rolling Shutters—electrical or hand-operated—are your premises' best possible protection against fire or theft.

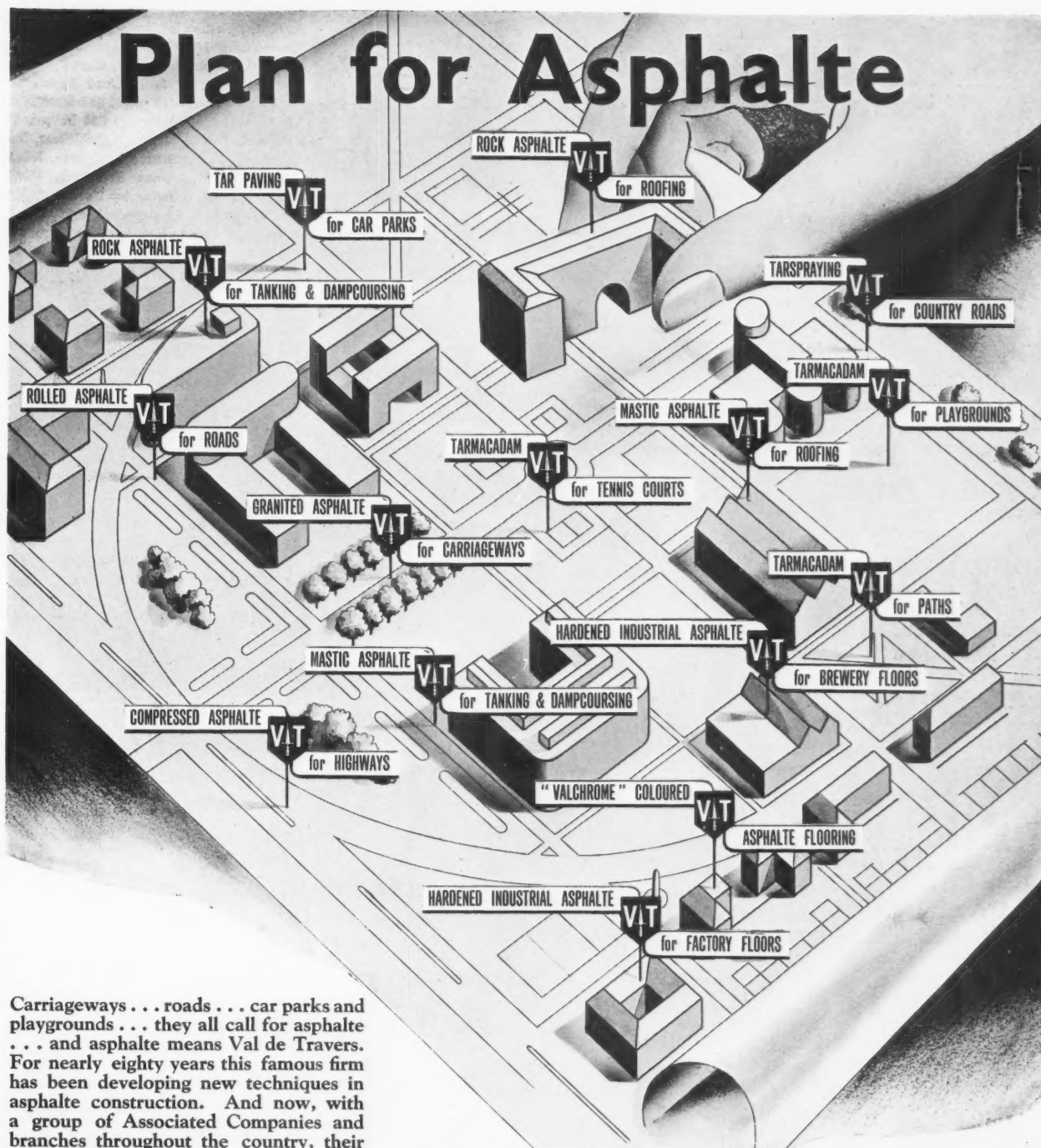
Part of an industrial building protected by Milners shutters



Write for full particulars and Catalogue to the Shutter Division of

**Milners Safe Co. Ltd. 58 Holborn Viaduct, London, E.C.1.**

Telephone: CENTral 0041-5



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LIMMER & VORWOLLE ROCK ASPHALTE CO. LTD. W. G. WALKER (GLASGOW) LTD.

#### BRANCHES

BIRMINGHAM • CANTERBURY • EXETER • GLASGOW • LINCOLN  
LIVERPOOL • MANCHESTER • NEWCASTLE-ON-TYNE

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flooring: Pim Brothers Ltd. Central heating, ventilating: McCann Ltd. Gas supply: Alliance & Dublin Consumers Gas Co. Electric wiring: Coras Iompair Eireann. Counterbalanced door: Eclair Doors Ltd. Cranes: Vaughan Crane Co. Terrazzo: Verno Bros. Floor hardening: Evode Chemicals Ltd. Window panels: Carthorn Ltd. Sanitary fittings: Davis King & Co. Fencing: Federated Engineers Ltd. Rainwater pipes: Vitreflex.

School at Litherland, Near Liverpool. General contractors: Wm. Tomkinson & Sons. Sub-contractors: 'Acotile' and wood block flooring: R. W. Brooke & Co. Asphalt flooring: Highways Construction Ltd. 'Korkoid' linoleum: Rowan & Boden Ltd. Rubber flooring: Steven & James Ltd. Terrazzo tiles and w.c. partitions: Conways (Tiles & Terrazzo) Ltd. Sementex flooring: Sementex Ltd. Suspended ceilings: Sundeala Board Co; Tentest Fibre Board Co.; Gyproc Products Ltd.; Beaumonts (Manchester) Ltd.; Bracketing, Centering & Lathing Ltd.; William Evans & Co. Artificial stonework: Pearson Bros. & Campbell Ltd. Balustrading to staircases: W. & R. Leggott Ltd. Bricks: Proctor & Lavender Ltd. Broadcast reception system: Communication Systems Ltd. Boilers: Ideal Boilers & Radiators Ltd. Cupboards and fittings: The Roachwood Co. Cloakroom fittings: Clark Hunt & Co. Electrical installation: H. J. Cash & Co. Egg-crate laylight: Carowe Electrical Co. Classroom desks and chairs: Esavian Limited. Heating installation: C. Seward & Co. Heating control panel: Rheostatic Co. Ironmongery: Laidlaw & Thompson Ltd. Light fittings: Hailwood & Ackroyd Ltd. Paint: Leyland Paint & Varnish Co. Roofing: Ruberoid Co.; Wm. Briggs & Sons. Stage equipment and lighting: Watts & Corry Ltd.; Strand Electric & Engineering Co. Lighting conductors: W. & J. Furse & Co. (London). Grounds laid out by: Maxwell M. Hart Ltd.

Flats at North Kensington. General contractors: Holloway Brothers (London) Ltd. Sub-contractors: Electricians: Iverson Electrical Ltd. Plasterers: Jeffries & Grant Ltd. Ironwork, sanitary goods, balustrading: H. & C. Davis & Co. Painters: C. & T. Painters Ltd. Flooring: Montrose Industries Ltd. Windows, metal door frames: Crittall Manufacturing

Co. Glaziers: Faulkner Greene & Co. Heating (solid fuel fire): Eagle Range & Grate Co. Fencing: A. J. Binns Ltd. Asphalt: Excel Asphalt Co. Fireplaces: B. Finch & Co. Roof tiles: Roberts Adlard & Co. Kitchen fittings: Built-In Fixtures Ltd. Stonework and stairs: Enfield Stone Co. Wireless installation: British Relay Wireless Ltd. Garden work: Garden Landscapes Ltd. Structural steelwork: The Aston Construction Co. Gas fire flues: The Marley Tile Co. Doors: Yelverton Dawbarn Ltd. Ironmongery: Nettlefold & Moser Ltd. Bricks: Henfield Brick & Tile Co. Cill tiles: Langley London Ltd.

## ACKNOWLEDGMENTS

RAILWAY TERMINUS AT ROME pages 208-215: 6, 8, 12, 13, 16, 21, 22, 23, 24, Marion Johnson; 7, 10, 11, 14, 15, 17, 18, 19, Foto Vasari; 9, Ferrovie dello Stato; 20, Sam Lambert. BUILDING WITH WIT pages 216-225, all Country Life except 11, from Richard Norman Shaw published by B. T. Batsford, 1940. HOUSE AT FITZROY PARK, HIGHGATE pages 226-229; Galwey Arphot. FESTIVAL PLEASURE GARDENS, BATTERSEA PARK pages 230-235. Chief Designer responsible, in addition to certain individual features, for main layout, decorations, lighting and co-ordination of designs, James Gardiner. Landscape architect for entire site in addition to certain detailed layouts, Russell Page. Chief Architects, Harrison and Seel. Chief Consultants: structural, C. V. Blumfield; electrical, H. E. Baker; sanitary and water, W. J. Woolgar. Other consultants: Main Restaurant, F. J. Samuely; West End Restaurant, L. L. Kenchington; for all R. K. Pullen's buildings, S. H. and D. E. White. Pages 230 & 231 Festival Gardens Ltd. THE INVESTIGATION OF CRYSTAL STRUCTURE pages 236-239: 1, 2, 4, 5, 6, 7, 8, 10, 11, 12, Richard Sharpe Studios; 3, 9, CID; page 239 H. B. Dyer. BRUNEL AND PADDINGTON

pages 240-246: 1, 10, 14, 16, 18, Galwey Arphot; 2, 8, 17, British Railways; 3, NBR; 6, 11, 12, H. Gernsheim; 15, Read Arphot. CURRENT ARCHITECTURE pages 247-250: 1, Cino Photography; 2, 3, Stewart Bale; 4, 5, Bedford Lemere; 6, Galwey Arphot. MISCELLANY pages 251-262: Townscape, de Wolfe Arphot except page 252 bottom left and top centre H. Dennis Jones; Exhibitions, Foto Vrijhof; Townscape, Programme Sculpture, Werk, October, 1950; Lettering, Sans Style, de Wolfe Arphot; Indoor Plants, drawing by Gordon Cullen; Popular Art, M. and V. Chalupnick except p. 256 centre columns, Statue Fotomericky Ustav V Praze; MARGINALIA pages 263-272: 2, British Railways; 8, the artist's executrix; 9, 10, H. J. Usill; 11, A. C. Cooper; 12, Festival of Britain.

## Appointments

### LONDON COUNTY COUNCIL

Applications are invited for a temporary position of Architect Grade 1 (£840 x £40—£960) in the Housing Architect's Division of the Housing and Valuation Department. Appointment will be superannuable and the successful candidate will be eligible for consideration for appointment to the permanent staff on the occurrence of vacancies. Applicants must possess a recognised professional qualification.

The successful candidate will be placed in charge of technical staff engaged in the production of drawings and contract particulars for blocks of flats or cottage estates and also of supervision of the work during construction.

Application forms which must be returned within fourteen days of the appearance of this notice are obtainable from Director of Housing and Valuer, The County Hall, S.E.1 (stamped addressed envelope required and quote reference A/27). Canvassing disqualifies. (146).

## Exhibitions

GUILDHALL ART GALLERY, E.C. 2  
TEMPERA AND MURAL PAINTINGS. Weekdays 10—5.

### LEICESTER COLLEGE OF ART

#### FESTIVAL OF BRITAIN

The City of Leicester Art Gallery Committee is proposing to stage in the Autumn an Exhibition of the work of students and staff who have been associated with the Leicester College of Art. Will all past students and those who have served on the staff who are willing to submit work for this Exhibition write at once to the Principal of the College, The Newark, Leicester.

# SOUND REPRODUCTION



AT THE FESTIVAL FAIR

The relay of music and announcements throughout the Festival Gardens is centred at the H.M.V. Music Pavilion. Visitors to the Festival Fair will notice the remarkably high quality of reproduction achieved by the latest Sound Amplification equipment developed by "His Master's Voice". Enquiries for the hire or permanent installation of such equipment should be addressed to:

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